

P.W.

CONFIDENTIAL

Release Date 5-5-74

COUNTY Maricopa AREA 7 mi. W of Glendale LEASE NO. John L. Roach & Arthur E. Baker

WELL NAME CALIFORNIA LIQUID GAS CORPORATION STORAGE WELL NO. 1 Roach-Baker

LOCATION SW/NW SEC 2 TWP 2N RANGE 1W FOOTAGE 1110.61 FWL - 2440.0 FNL

ELEV 1087 GR KB SPUD DATE 9-27-73 STATUS storage well TOTAL DEPTH 3200'
COMP. DATE 10-19-73

CONTRACTOR FENIX & SCISSONS, INC. (J. O. BARNES DRILLING CONT.) ***P&A 11/13/88**

CASING SIZE	DEPTH	CEMENT	LINER SIZE & DEPTH	DRILLED BY ROTARY	
14"	32 GL	circ.		X	
9 5/8"	1580	474 sx			
7"	2702	csg. hung			
4 1/2"	3194	csg. hung			
				DRILLED BY CABLE TOOL	
				PRODUCTIVE RESERVOIR	NA
				INITIAL PRODUCTION	NA

FORMATION TOPS		DEPTHS	SOURCE L.L. E.L.	REMARKS
0	228			surface sand and gravel
228	608			sand and clay
608	833			clay and hard sand
833	1010			anhydrite and shale
1010	3200			salt

PLUGGED & ABANDONED 11/13/88
Replaced by Roach-Baker 1A P/N 865

ELECTRIC LOGS	PERFORATED INTERVALS	PROD. INTERVALS	SAMPLE LOG
Caliper Log, Nuclear Log	None	N.A.	SAMPLE DESCRP.
3-D Velocity Log, Comp.			SAMPLE NO. <u>1726</u>
Formation Density Log			CORE ANALYSIS
<u>Sonar Caliper Report log file in Confidential File</u>			DSTs <u>None</u>

REMARKS This well to be used for LPG Storage
APP. TO PLUG 9/22/87
PLUGGING REP. 12/2/88
COMP. REPORT 11-5-73

WATER WELL ACCEPTED BY _____

BOND CO. SAFECO INS. COMPANY OF AMERICA BOND NO. 2210108

BOND AMT. \$ 5,000 CANCELLED _____ DATE _____ ORGANIZATION REPORT 7-25-73 & 7-30-73

FILING RECEIPT 2 LOC. PLAT X WELL BOOK X PLAT BOOK X

API NO. 02-013-20006 DATE ISSUED 9-7-73 DEDICATION NA

PERMIT NUMBER 617

CONFIDENTIAL

(over)

Release Date 5-5-74

NO.	FROM	TO	RESULTS
			None

REMEDIAL HISTORY

DATE STARTED - COMPLETED		WORK PERFORMED	NEW PERFORATIONS

WELL COMPLETION OR RECOMPLETION REPORT		WELL LOG	
DESIGNATE TYPE OF COMPLETION:			
New Well <input checked="" type="checkbox"/>	Work-Over <input type="checkbox"/>	Deepen <input type="checkbox"/>	Plug Back <input type="checkbox"/>
Same Reservoir <input type="checkbox"/>	Different Reservoir <input type="checkbox"/>	Oil <input type="checkbox"/>	Gas <input type="checkbox"/>
DESCRIPTION OF WELL AND LEASE			
Operator California Liquid Gas Corporation		Address P. O. Box 28397, Sacramento, Calif. 95828	
Federal, State or Indian Lease Number or name of lessor if fee lease N/A		Well Number 1	Field & Reservoir LP-Gas storage
Location 1110.61 FWL & 2440.0 FNL		County Maricopa	
Sec. TWP-Range or Block & Survey Section 2, T-2N, R-1W, G&SRB&M			
Date spudded Sept. 26, 1973	Date total depth reached Oct. 18, 1973	Date completed, ready to produce Oct. 19, 1973	Elevation (D.F. RT or Gr.) 1087 Gr.
Total depth 3200	P.T.D. N/A	Single, dual or triple completion? Single	Elevation of casing hd. Range 1088 feet
Producing interval (s) for this completion N/A		Rotary tools used (interval) All	Cable tools used (interval) None
Was this well directionally drilled? No	Was directional survey made? No	Was copy of directional survey filed? ---	Date filed ---
Type of electrical or other logs run (check logs filed with the completion) Induction, Density, 3-D			Date filed Attached
CASING RECORD			
Casing (report all strings set in well—conductor, surface, intermediate, producing, etc.)			
Purpose	Size hole drilled	Size casing set	Weight (lb./ft.)
surface	12-1/4"	9-5/8"	36
solution	8-3/4"	7"	20
solution	8-3/4"	4-1/2"	9.5
Depth set		Sacks cement	Amt. pulled
1580'		1685	0
2702'		Hung uncemented	
3194'		Hung uncemented	
LINER RECORD			
Size in.	Depth set ft.	Packer set at ft.	Screen (ft.)
PERFORATION RECORD			
Number per ft.	Size & type	Depth Interval	
			N/A
ACID, SHOT, FRACTURE, CEMENT SQUEEZE RECORD			
Am't. & kind of material used		Depth Interval	
INITIAL PRODUCTION			
Date of first production N/A		Producing method (indicate if flowing, gas lift or pumping—if pumping, show size & type of pump) N/A	
Date of test	Hrs. tested	Choke size	Oil prod. during test bbls.
			MCF
Tubing pressure		Casing pressure	Cal'd rate of Production per 24 hrs.
			Oil bbls.
			Gas MCF
			Water bbls.
			Gas-oil ratio
Disposition of gas (state whether vented, used for fuel or sold):			
<p>CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the.....Project Manager.....of the Fenix & Scisson, Inc.(company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.</p> <p>November 5, 1973 Date</p> <p><i>H. H. Holloway</i> Signature H. H. Holloway</p> <p>Fenix & Scisson, Inc., is Agent for California Liquid Gas Corporation</p>			
RECEIVED		STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION	
NOV 11 1973		Well Completion or Recompletion Report and Well Log	
Permit No. 617		Form No. 4	
O & G CON. COMM.		File One Copy	

(Complete Reverse Side)

DETAIL OF FORMATIONS PENETRATED

Formation	Top	Bottom	Description
	0	228	surface sand and gravel
	228	608	sand and clay
	608	833	clay and hard sand
	833	1010	anhydrite and shale
	1010	3200	salt
Core #1	1227	1243	salt
Core #2	2291	2310	salt
Core #3	3064	3082	salt

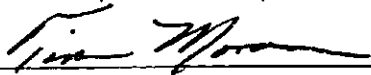
Show all important areas of geology, detail of all cores, and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries.

INSTRUCTIONS:

Attach driller's log or other acceptable log of well.

This Well Completion or Recombination report and well log shall be filed with the State of Arizona Oil & Gas Conservation Commission not later than thirty days after project completion.

Form No. 4

PLUGGING RECORD					
Operator AP Propane Inc, dba CAL GAS			Address P.O. Box 28397 Sacramento, CA. 95828		
Federal, State, or Indian Lease Number or lessor's name if fee lease John L. Roach & Arthur E. Baker		Well No. 1	Field & Reservoir Storage Well		
Location of Well 1110.61' FWL & 2440.0' FNL Sec 2, Twp 2N, Rge 1W			Sec-Twp-Rge or Block & Survey		County Maricopa
Application to drill this well was filed in name of California Gas Liquids Corp.		Has this well ever produced oil or gas N/A	Character of well at completion (initial production): Oil (bbls/day) Gas (MCF/day) Dry? LPG Storage		
Date plugged: 11/13/88		Total depth Cavern T.D. Approx 2800'	Amount well producing when plugged: Oil (bbls/day) Gas (MCF/day) Water (bbls/day) N/A		
Name of each formation containing oil or gas. Indicate which formation open to wellbore at time of plugging	Fluid content of each formation		Depth interval of each formation		Size, kind & depth of plugs used. Indicate zones squeeze cemented, giving amount cement
See Attached Plugging Report					
CASING RECORD					
Size pipe	Put in well (ft.)	Pulled out (ft.)	Left in well (ft.)	Give depth and method of parting casing (shot, ripped, etc.)	Packers and shoes
14"	35'	none	35'	N/A	
9 5/8"	1578'	none	1578'	N/A	
Was well filled with heavy drilling mud, according to regulations? Cemented to Surface			Indicate deepest formation containing fresh water.		
NAMES AND ADDRESSES OF ADJACENT LEASE OPERATORS OR OWNERS OF THE SURFACE					
Name		Address		Direction from this well:	
Morton Salt		1300 W. Glendale Ave., Glendale AZ.		South	
In addition to other information required on this form, if this well was plugged back for use as a fresh water well, give all pertinent details of plugging operations to base of fresh water sand, perforated interval to fresh water sand, name and address of surface owner, and attach letter from surface owner authorizing completion of this well as a water well and agreeing to assume full liability for any subsequent plugging which might be required.					
Use reverse side for additional detail.					
CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the <u>Project Manager</u> of the <u>PB-KBB INC. agent for CAL GAS</u> (company) and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.					
Date 12/2/88		Signature 			
Permit No. #617			STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION Plugging Record File One Copy Form No. 10		

SUNDRY NOTICES AND REPORTS ON WELLS

1. Name of Operator AP Propane Inc. dba CAL GAS

2. OIL WELL ☐ GAS WELL ☐ OTHER ☐ (Specify) Storage Well

3. Well Name No. 1 Roach - Baker

Location 1110.61' FWL & 2440.0' FNL

Sec. 2 Twp. 2N Rge. 1W County Maricopa, Arizona.

4. Federal, State or Indian Lease Number, or lessor's name if fee lease _____

5. Field or Pool Name _____

6. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF <input type="checkbox"/>	PULL OR ALTER CASING <input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	DIRECTIONAL DRILL <input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	PERFORATE CASING <input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	CHANGE PLANS <input checked="" type="checkbox"/>
(OTHER) <u>Revised Plugging Program</u>	

SUBSEQUENT REPORT OF:

WATER SHUT-OFF <input type="checkbox"/>	MONTHLY PROGRESS <input type="checkbox"/>
FRACTURE TREATMENT <input type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>
SHOOTING OR ACIDIZING <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
(OTHER) _____	ABANDONMENT <input type="checkbox"/>

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

7. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

The following revisions were made to the Plugging Program submitted with the Sundry Report dated 5/10/88:

1. An inflatable packer set in Salt borehole, in lieu of cementing umbrella.
2. ASTM C150 Type 2 cement used for plug in casing, in lieu of API Class "A" neat or equivalent.

These revisions were approved by Mr. Dan Brennan, Executive Director, AZ O&GCC on 9/30/88.

8. I hereby certify that the foregoing is true and correct.

Signed Jim Moran Title Project Manager Date 12/2/88
PB-KBB INC. Agent for CAL GAS

Permit No. #617

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION
Sundry Notices and Reports On Wells
File One Copy
Form No. 25

**PLUGGING REPORT
CAL GAS CORPORATION
WELL NO. 1 ROACH-BAKER
(CAL GAS STORAGE WELL NO. 1)**

ATTACHMENTS:

1. State of Arizona Oil & Gas Conservation Commission Sundry Notices and Reports on Wells (Form No. 25), dated 12/2/88
2. State of Arizona Oil & Gas Conservation Commission Plugging Record (Form No. 10), dated 12/2/88
3. PB-KBB Inc. Plugging Report - Well No. 1 Roach-Baker
4. Sketch - Plugging Schematic - Well No. 1 Roach-Baker
5. Sketch - Davis Super Cementing Basket
6. Atlas Wireline Services 4-Arm Caliper Log
7. Scientific Drilling International Gyroscopic Directional Survey

PLUGGING REPORT
CAL GAS CORPORATION
WELL NO. 1 - ROACH BAKER
(CAL GAS STORAGE WELL NO. 1)

Workover Dates: 10/2/88 - 11/14/88

- Objectives:
1. Drill Out Bridge Plug
 2. Run Open Hole Caliper Log
 3. Run Deviation And Directional Survey
 4. Install an Open Hole Cement Plug
 5. Plug The Well With Cement To Surface

Workover Log: The following is a chronological summary of the plugging operation:

10/02/88 Bob James Drilling & Exploration, workover rig contractor, moved equipment to the location.

10/03/88 No activity.

10/04/88 Rig contractor moved equipment to the location. Verified Contractor's state drilling license renewed.

10/05/88 No activity. Waited on Contractor to obtain required Liability and Workman's Compensation insurance.

10/06/88 received required Contractor's insurance certificates. Commenced rigging up workover rig.

10/07/88 Continued rigging up rig. Progress slow due to inexperienced personnel.

10/08/88 Completed rigging up rig. Rig on day work at 1100 hours. Started installing blowout preventer stack.

10/09/88 Completed installing blowout preventer. All B.O.P. equipment and mud lines tested to 500 psi for 30 minutes. Made up milling tools and ran in the hole. Hit a bridge at 115 feet G.L. Drilled out bridge and encountered a small blow. Tagged fill at 1518 feet G.L.

10/10/88 Washed down to bridge plug at 1549.95 feet G.L. Started milling on plug. Pressure under the bridge plug forced the drilling string to move up into the top of the derrick, breaking the Kelly hose at the stand pipe. B.O.P. was closed, but brine and some product flowed from the broken Kelly hose. Notified all authorities. Built berm around location to confine brine.

10/11/88 Allowed cavern to stabilize. Used a crane to secure the blocks and drilling string to the derrick with slings. Bled off gas pressure to Cal Gas flare.

10/12/88 Waited on remote air powered saw to cut off drill pipe.

10/13/88 Cut off drill pipe approximately 4 feet above rig floor. Laid the derrick over. Installed overshot with safety valve on drill pipe stub and shut in.

10/14/88 Removed bent Kelly and drill pipe from the derrick and commenced rig repair.

10/15/88 Continued rig repair.

10/16/88 Completed rig repair. Rigged up to pull drill string.

- 10/17/88 Attempted to circulate, drill pipe was plugged. Pulled drill pipe and milling tools. Ran back in the hole with drill pipe open ended and circulated water to clean up system. Circulated brine received from CalGas brine line. Maximum weight of brine was 9.6 ppg.
- 10/18/88 Continued in the hole with the drill pipe, tagged the bridge plug at 1495 feet G.L. and pulled out. Ran in the hole with 8½" bit and drilled up the remaining bridge plug. Ran drill pipe to 1815 feet G.L. to make sure hole was clear to cavern roof.
- 10/19/88 Rigged up Atlas Wireline logging truck and ran 4-arm caliper log of borehole. Ran gyroscopic directional survey by Scientific Drilling International.
- 10/20/88 Waited on Dowell/Schlumberger cementers.
- 10/21/88 Rigged up Dowell/Schlumberger equipment. Made two attempts to run in and set Davis Lynch inflatable packer. The inflation port was blocked by salt, scale and pipe dope.
- 10/22/88 Pulled the packer and cleaned the ports. Reran the packer and attempted to set it. The packer acted as though the element had split. Pulled the packer up to 9-5/8" casing. The packer pulled tight for three stands up into the 9-5/8" casing. Backed off the safety joint and pushed the packer downhole to 1662 feet. Attempted to set a balanced cement plug in borehole. Spotted 106 ft³ of fast set cement. W.O.C. overnight.
- 10/23/88 Ran drill pipe but did not tag cement. Second attempt - spotted 115 ft³ of fast set cement. W.O.C. overnight.
- 10/24/88 Ran drill pipe but did not tag cement. Third attempt - spotted 121 ft³ of Dowell fillite (bubble) cement. W.O.C. overnight.

10/25/88 Opened wellhead valve and bubble cement silica flour and ceramic spheres flowed from well. Spheres had separated from cement and risen to the surface. Decision was made to shut down the operation until another packer could be delivered.

10/26/88 Circulated hole clean of fillite material and pulled drill pipe. Shut rig down and released crew.

10/27/88 - No activity, waited on equipment.

11/03/88

11/04/88 Ran in the hole with new Davis-Lynch inflatable packer. Could not get packer to set. Pulled the packer and found salt on top of the inflation valve.

11/05/88 Ran the packer in the hole and attempted to set. The packer appeared to inflate, but drill string could be moved up and down with no resistance. Pulled packer and found the element had split. Ran in the hole with drill pipe and attempted to spot a sodium silicate plug. System pressures would not equalize. Circulated sodium silicate out of hole.

11/06/88 Ran Davis "Super Cementing Basket" in the hole with a backoff sub two joints above basket. Top of basket at 1666 feet G.L., bottom at 1673 feet G.L. Spotted 58 ft³ (45 sacks) of Class "G" salt saturated cement, 16.2 ppg. (Note: sketch of Davis "Super Cementing Basket" is attached.)

11/07/88 W.O.C.

11/08/88 Checked cement plug. Pulled up 4000# and set down 2000#. Backed off the drill pipe. Attempted to circulate but the drill pipe was plugged. Pulled out of the hole. One joint full of cement and 12 feet up inside another.

11/09/88 Tagged cement at 1657 feet G.L. - 9 feet of fill up. Mixed and pumped 54 ft³ (42 sacks) of Class "G" salt saturated cement, 16.2 ppg.

11/10/88 W.O.C.

11/11/88 Tagged cement at 1630 feet G.L. - 27 feet of fill up. Mixed and pumped 151 ft³ (118 sacks) of Class "G" salt saturated cement, 16.2 ppg.

11/12/88 Tagged cement at 1581 feet G.L., 3 feet below the 9-5/8" casing. Mixed and pumped 58 ft³ (45 sacks) of ASTM C150 Type 2 salt saturated cement, 16.2 ppg.

11/13/88 Tagged cement at 1517 feet G.L. Cemented to surface in 4 stages with ASTM C150 Type 2 fresh water cement.

First Stage: Drill pipe at 1503 feet. Cemented with 174 ft³. Pulled to 1128 feet and circulated (approximately 1.5 bbl cement returns).

Second Stage: Drill pipe at 1128 feet. Cemented with 174 ft³. Pulled drill pipe to 721 feet and circulated (approximately 2 bbls cement).

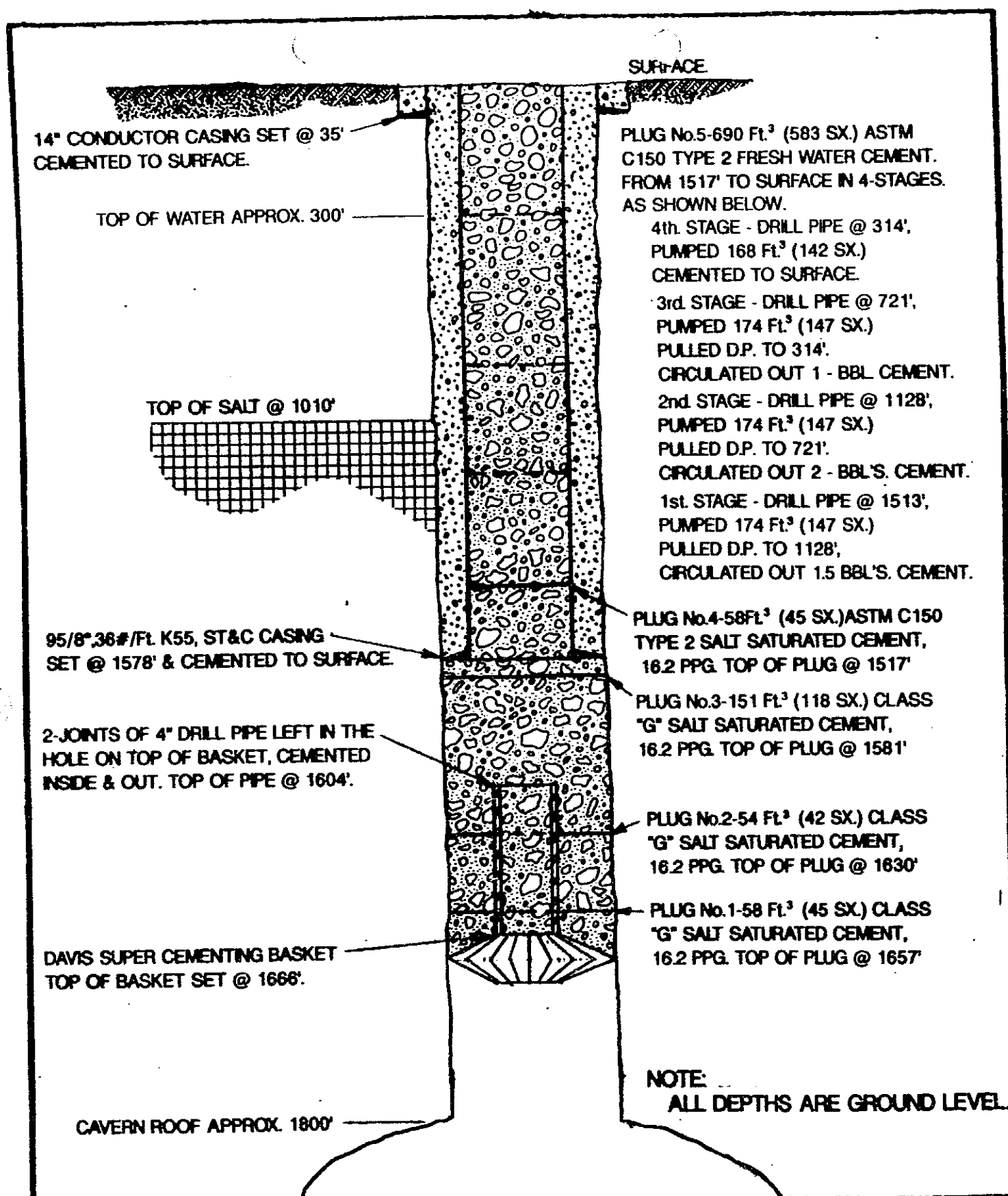
Third Stage: Drill pipe at 721 feet. Cemented with 174 ft³. Pulled drill pipe to 314 feet and circulated (approximately 1 bbl cement).

Fourth Stage: Drill pipe at 314 feet. Cemented with 168 ft³. Pulled drill pipe out of hole. Ran 1 joint back in and circulated. Cement at surface. Topped out well.

Rigged down and released Dowell.

11/14/88 Rigged down and released workover rig.

NOTE: Plugging schematic for Well No. 1 Roach-Baker is attached.



PB-KBB Inc.
Subsurface Systems & Technology

AP PROPANE INC.
dba CAL GAS

PLUGGING SCHEMATIC
WELL No. 1 ROACH-BAKER

JOB NO.
303008

DRAWN: KFL

CHECKED: MH

DATE: 11-29-88

SCALE: NONE

DRAWING NO.

SUPER CEMENTING BASKET

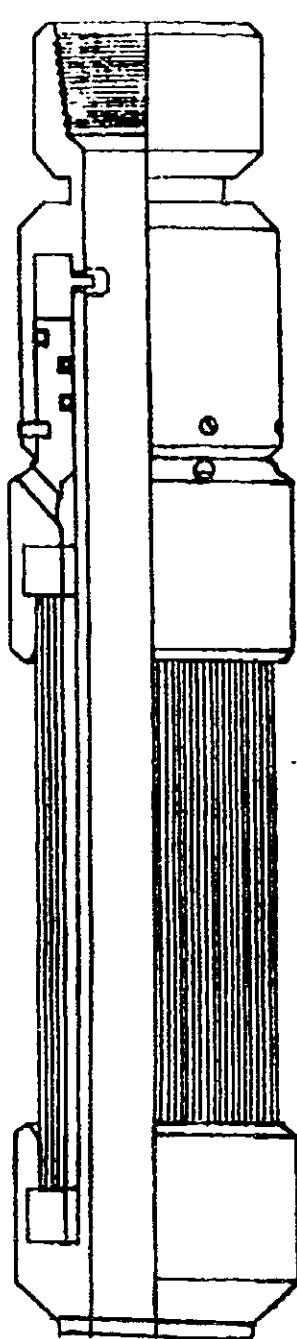


Fig. 1
RUNNING IN HOLE

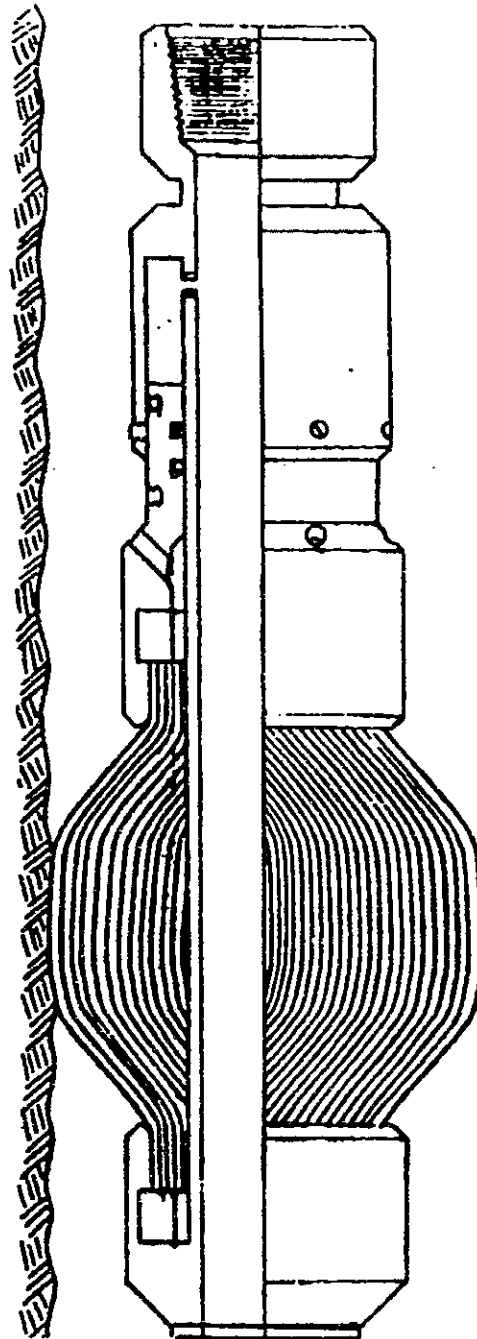


Fig. 2
EXPANDING CEMENT BASKET

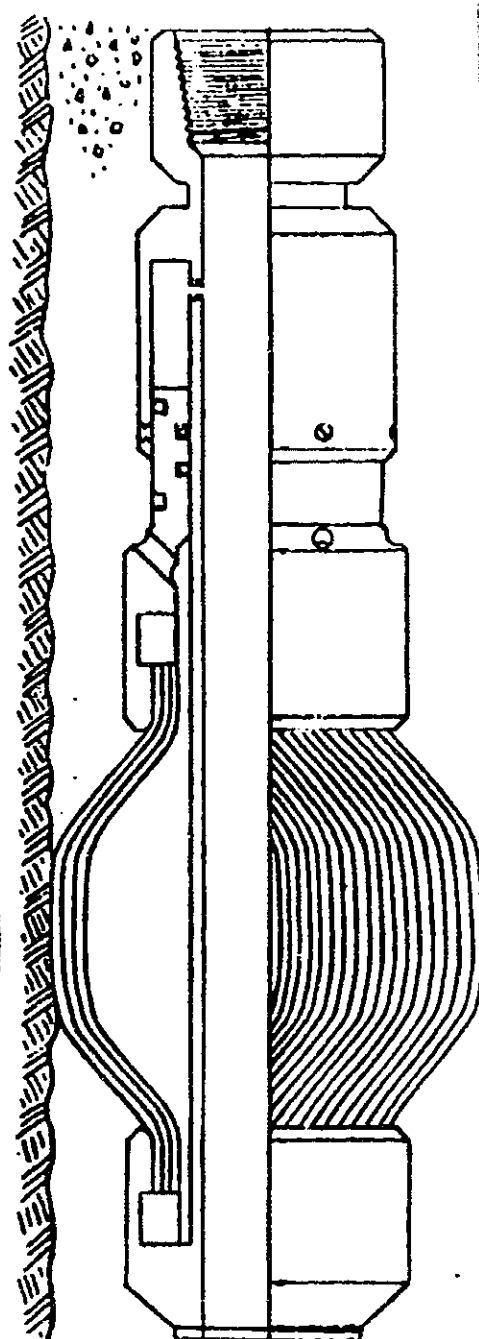
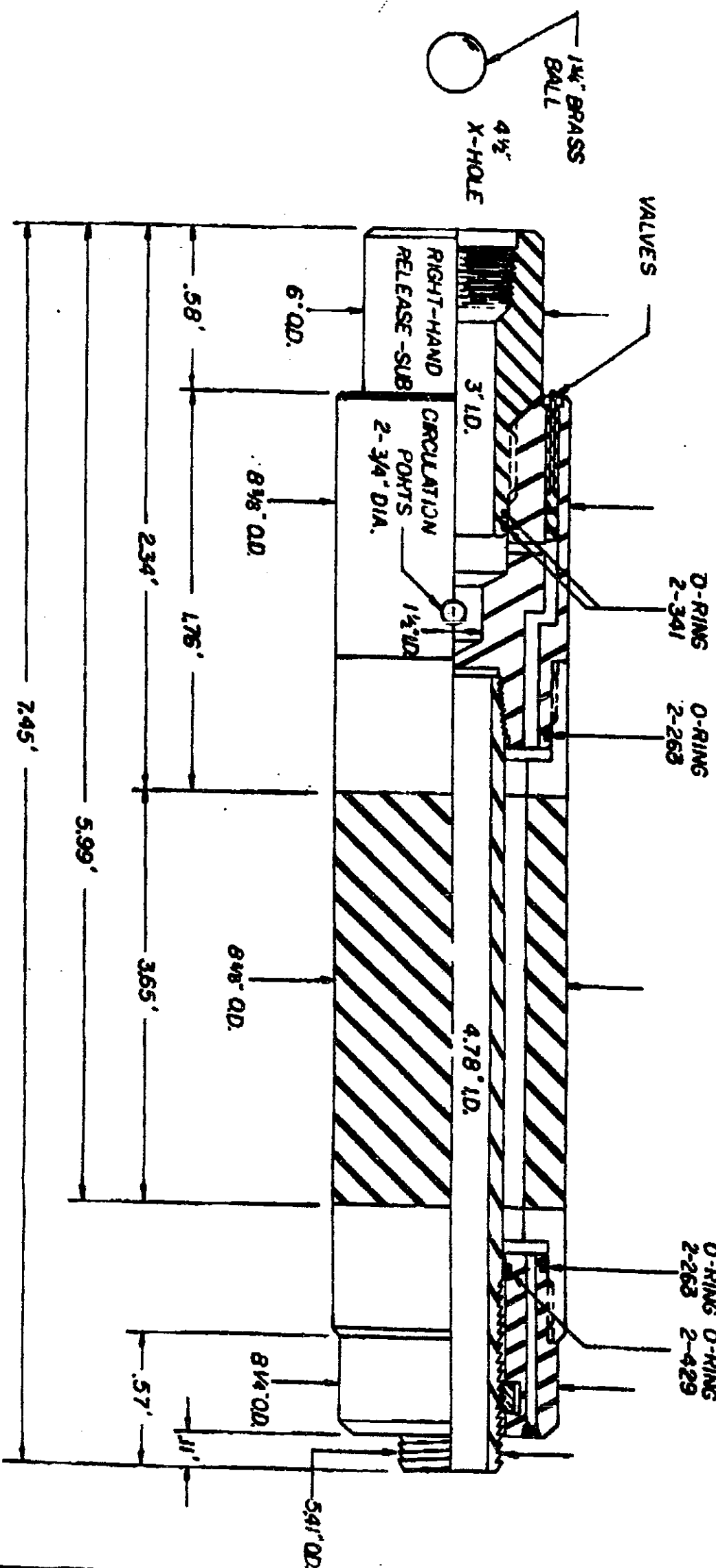


Fig. 3
CEMENTING ABOVE BASKET



NOTE: ALL ANGLES ARE 45° UNLESS OTHERWISE SPECIFIED.

DATE 10/27/88

7' BRIDGE PLUG

PROPERTY OF DAVIS — LYNCH, INC.
ASSEMBLY

PLUGGING PROCEDURE
FOR
CAL GAS ROACH-BAKER NO.1 MARICOPA COUNTY ARIZONA

- File*
1. Make up Davis 7" bridge plug on 4"x H drill pipe.
 - a. Actual OD of bridge plug is 8 3/8"
 - b. Bridge plug is an inflatable packer
 - c. Bridge plug has circulation ports immediately on top of the plug.
(See attached drawing)
 - d. On top of the circulating ports is a right-hand release sub. (See attached drawing)
 2. Run bridge plug in the hole to the desired setting depth.
 - a. Drill pipe will not require filling from the top as the drill pipe will fill automatically through the circulating ports.
 3. When the desired setting depth is reached, circulate 5 barrels of brine through the circulation ports to flush away any solids that may be in the inflation valve area.
 - a. Do not exceed 200 psi while circulating the 5 barrels of brine.
 4. Drop a 1 3/4" brass ball to close the circulation ports.
 - a. Wait 15 minutes for the ball to fall & seat.
 5. Inflate the plug slowly by pumping brine with Dowell pump truck.
 - a. The shear pin in the valve is set at 250 psi \pm 15% or 37.5 psi.
 - b. To assure the shear pin has sheared properly slowly increase the pressure to 400 psi. (Additional pressure applied will not enter the plug)
 6. Hold the 400 psi pressure for 5 minutes.
 7. Pull 1000 pounds on the drill pipe with the pressure still in place to check that the plug is anchored in the wellbore.
 8. Bleed the pressure from the drill pipe.

OK WJB
11/4/88

9. Rotate the drill pipe to the right and release from the plug.
10. After picking up the drill pipe 10', slowly lower the drill pipe and retag the plug. (1000 pounds)
11. Pick up 5' above the plug.
12. Mix & pump enough salt saturated class G or equivalent cement to create a 50' cement plug. (approximately 15 barrels of slurry)
13. Pull 5 stands of drill pipe.
14. Pump enough brine to clear the drill pipe. (20 barrels)
15. Shut the well in and W.O.C. 48 hrs before tagging the cement.
16. If the plug is in place proceed with the next step. If there is no plug in the bore hole, but the bridge plug is still in place. Recement as above. If this fails go to alternate CMT-basket & same procedure.
17. After tagging the plug - spot enough salt saturated class G cement to create a 100 foot cement plug.
18. Pull up 8 stands and circulate the drill pipe & hole out.
19. Close in the well & W.O.C. 24 hours.
20. Tag the cement & complete plugging the hole. Use fresh water cement in lifts of 400' for each lift to within 10' of the surface.
21. Release the rig & drove out.

CAL GAS ROACH BAKER #1

Friday 11/11/88 - Veterans' Day

Tagged cement. Ran 150 cu. ft. cement,
Pulled out of hole 9 joints, circulated. Shut in. WOC

Saturday 11/12/88 - Saturday

Tagged cement @ 1582 - below casing.
Ran class B cement w/Brine. Pulled out of hole 8
joints. Circulated. Shut in. WOC.

Nov. 13, 1988 - Sunday

Tagged cement at 1510 KB ran class B in four lifts at
1503', 1127', 720', and 313', circulated cement to
surface. Shut in. WOC.



Oil and Gas Conservation Commission

STATE OF ARIZONA

3110 N. 19th AVENUE, SUITE 190

PHOENIX, ARIZONA 85015

PHONE: (602) 255-5161

CAL GAS ROACH BAKER #1

MEMO TO FILE

Thursday 11/3/88

Departed 5649 E. Angela 05:50, arrived at well site 06:45.

Ran packer, no inflation, pulled tool, was filled with salt.
Departed 15:00.

Saturday 11/5/88

Left 5649 E. Angela 05:50, arrived at well site 0645.

Ran open hole packer. Attempted to inflate. Packer failed.
Pulled packer out of hole. Packer had ruptured. Attempted to
cement with accelerated cement. Failed. Ran out of daylight.
Shut down overnight, left location 6:45 PM, arrived home at
8:00PM.

Sunday 11/6/88

Left 5649 E. Angela 0555, arrived at well 0645. Ran "super
cementing basket." Set basket, ran 58 cu. ft. salt cement.
Shut in to WOC 48 hours. Left location 1400, arrived home
15:00.

Memo to the file
Cal Gas Roach Baker #1
Permit No. 617

On October 21 Cal Gas resumed attempts to plug this well. Two attempts to set a special-built open-hole packer failed. The packer did not inflate.

October 22.

On the third attempt to set the packer it started to inflate, then failed. Could not pull packer through casing, backed off and left packer in the hole.

Dowell ran 18.6 barrels of cement at 1660 feet, pulled up 4 joints and shut in.

October 23

Tried to tag cement - no evidence of cement. Dowell spotted 115 cubic feet cement at 1660, pulled up and shut well in.

October 24

Tried to tag cement - no evidence of cement. Dowell ran 121 cubic feet light weight "beaded" cement at 1662, pulled up one joint and shut well in. WOC 24 hours.

October 25

Opened well up, no flow. Pumped in 50 to 60 barrels SW, with no returns. Returns started, including segregated "beads" from cement. Recovered all of SW. Pulled all pipe, stood it on the bank and shut the well in, to wait on new ideas.

CAL GAS ROACH BAKER #1

MEMO TO FILE

Monday 10/10/88

Water flowing from gooseneck at top of Kelly. Pressure ca 400 at 2:00 PM, declined to 300 at 4:00 PM.

Met w/Col. from Luke, EMT DHS, HMT, etc. in their command post. Will let water flow decline to zero before opening up annulus. Only then proceed to repair mechanical damage and continue plugging effort.

Had 32,000 of drill pipe in hole at time of blow out - hit a bubble of gas.

Tuesday 10/11/88

Departed 5649 E. Angela 05:55, arrived at well site 06:45.

Pressure 140, flow decreased to about 10% of yesterday.

The plan is to secure the rig and drill pipe/kelly assembly and then bleed off the annulus.

Also present: Tom Moran PDKBB
Ric Collins Amerigas
Amerigas Mgr.
Amerigas P Information

@ 0830 pressure ca 130#, 10:00, 120, same @ 3:00 PM>

Open valve to flare @ 5:00 PM.
flare in 4 min.
died in 15 min.

LUKE AFB FIRE DEPT 856-3001/856-6511
 LUKE AFB Disaster Preparedness 856-7387 Sgt John Poppo
 LUKE AFB Disaster Preparedness 856-7388 CAPT Terry Meissner
 T/lt Fire Dept 856-7388
 Maricopa County Sheriff's Off. LT. Dave Hendershott
 " " Civil Defense FRANK L. RUSSO 256-1895
 M.C.S.O. JEEP POSSE PAUL KOVAR
 HEATH CONSULTANTS OFF. STEVE NIBBELER 256-1000
 MARICOPA COUNTY SHERIFFS CAPT. Jim PORTER 256-1000/256-1602
 MARICOPA County Sheriff's Off. Sgt. Trish MANN 247-3000 (Plant)
 Sullivan's Self Co. Don Borden 974-7155 (Home)
 Roach & Baker - Don Baker Season of Land 735-9691
 PEORIA FIRE DEPT 262-7496 MARVIN W. HARRIS F.M.
 PEORIA FIRE DEPT 262-7496 PAGE BATTALION 9 LESTER WROBLEWSKI B.C.
 PEORIA FIRE DEPT 262-7496 JOHN DAVICCO CAPT.
 AZ D.P.S. 262-8212 STEVE HART HAZMAT
 AZ D.P.S. 262-8212 LARRY CLARKE SGT.
 AZ State Commission Don Brennan

10/13/88

Memo to the File
Cal Gas 1 Roach Baker
Permit No. 617

At about 10:30 AM on October 10, 1988, while the operator was drilling out a bridge plug at 1540' a small blowout occurred. The kelly was driven up into the crown block and one joint of drill pipe was badly bent. (See photos) The crew abandoned the derrick floor and shut in the blowout preventures.

A small amount of gas escaped followed by a small flow of salt water up the drill pipe. Shut in pressure on the pipe rams was about 650 psi. As the flow continued the pressure dropped to 400 psi by 2:00 p.m. and to 300 psi at 4:00 p.m.

The flow continued to decline until the next afternoon by which time the operators had secured the kelly and traveling blocks. At about 5:00 p.m. the back side of the BOP was opened into the line which leads to the gas-water separator and the flare stack on top of the pit berm. The well flowed gas, which was flared, for about five minutes. Water followed and the pressure dropped to zero and the flow stopped at about 5:15 AM. The operator proceeded to clean up the location.

There were no injuries to persons, no fire, and one piece of drill pipe was bent beyond repair.

STATE OF ARIZONA
OIL AND GAS CONSERVATION COMMISSION

PERMIT 617

REPORT ON PROPOSED OPERATIONS

AP Propane, Inc., dba Cal Gas
P. O. Box 28397
Sacramento, CA 95828

Phoenix, ARIZONA
May 19, 1988

Your supplemental proposal to abandon well No. 1 Roach-Baker,
A.P.I. No. 02-013-20006, Section 2, T. 2N., R. 1W., G&SR B. & M.,
field, West Glendale area, - pool,
Maricopa County, dated 5/10/88, received 5/19/88 has been examined in conjunction with records
filed in this office.

THIS PROPOSAL IS APPROVED PROVIDED:

1. Adequate blowout prevention equipment is installed, tested and maintained in working condition during abandonment procedures.
2. THE COMMISSION IS NOTIFIED TO WITNESS:
 - a. The tagging of the 50-foot cement plug on top of the cementing umbrella.
 - b. The pumping of cement through tubing to \pm 10 feet below ground level.

BOND 2210108

D. J. BRENNAN, Executive Director

By R. A. Ytana
Enforcement Director

A copy of this report and the proposal must be posted at the well site prior to commencing operations.

Records for work done under this permit are due within 30 days after the work has been completed or the operations have been suspended.

RECEIVED

MAY 19 1988

O & G CONS. COMM.

SUNDRY NOTICES AND REPORTS ON WELLS

1. Name of Operator AP Propane Inc. dba CAL GAS
2. OIL WELL ☐ GAS WELL ☐ OTHER ☒ (Specify) Storage Well
3. Well Name No. 1 Roach-Baker
Location 1110.61' FWL & 2440.0' FNL
Sec. 2 Twp. 2N Rge. 1W County Maricopa, Arizona.
4. Federal, State or Indian Lease Number, or lessor's name if fee lease _____
5. Field or Pool Name _____

6. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF <input type="checkbox"/>	PULL OR ALTER CASING <input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	DIRECTIONAL DRILL <input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	PERFORATE CASING <input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	CHANGE PLANS <input checked="" type="checkbox"/>
(OTHER) <u>Revised Plugging Program</u>	

SUBSEQUENT REPORT OF:

WATER SHUT-OFF <input type="checkbox"/>	MONTHLY PROGRESS <input type="checkbox"/>
FRACTURE TREATMENT <input type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>
SHOOTING OR ACIDIZING <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
ABANDONMENT <input type="checkbox"/>	
(OTHER) _____	

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

7. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

The purpose of this supplemental Sundry Report is to submit the attached revised Plugging Program for the Well No. 1 Roach-Baker.

Please refer to Plugging Permit #617 and the Application to Plug and Abandon dated 9/22/87.

This work is tentatively scheduled to commence 6/1/88; however, this date is subject to rig and equipment availability.

8. I hereby certify that the foregoing is true and correct.

Signed Tom Moran
PB-KBB Inc. Agent for CAL GAS

Title Project Manager Date 5/10/88

Permit No. _____

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION
Sundry Notices and Reports On Wells
File One Copy
Form No. 26

AP PROPANE INC. dba
CAL GAS CORP.
PLUGGING PROGRAM
WELL NO. 1 ROACH-BAKER

RECEIVED

MAY 19 1988

G & G CONS. CORP.

Cal Gas' Storage Cavern No. 1 will be reactivated by plugging the existing storage well and directionally drilling a new re-entry well into the cavern.

The following program presents the proposed steps for surveying the existing Well No. 1 Roach-Baker to determine downhole location of well and cavern, and plugging the well. The program is recommended for use as a general guideline. Actual conditions encountered during the process will dictate the steps to be taken.

1. Move in and rig up workover rig.
2. Remove wellhead and install BOP's, double gate and annulus.
3. Pick up and run in the hole with a milling assembly and mill out the bridge plug set at 1540' G.L. (G.L. = 1' below CHF). Continue to run the milling assembly to 1900' G.L. (cavern roof at 1800').
4. Rig up logging truck and run directional survey to approximately 1800', and borehole caliper log.
5. Move in and rig up cementing contractor.
6. Install cementing umbrella on a joint of perforated aluminum on fiberglass tubing (plugged at the bottom). Run assembly in the hole on tubing and set at approximately 1700'. Exact setting depth will be determined from borehole caliper survey.
7. Pump and displace volume of light weight cement (approximately 11#/gal) required to form a 20' plug on the umbrella.

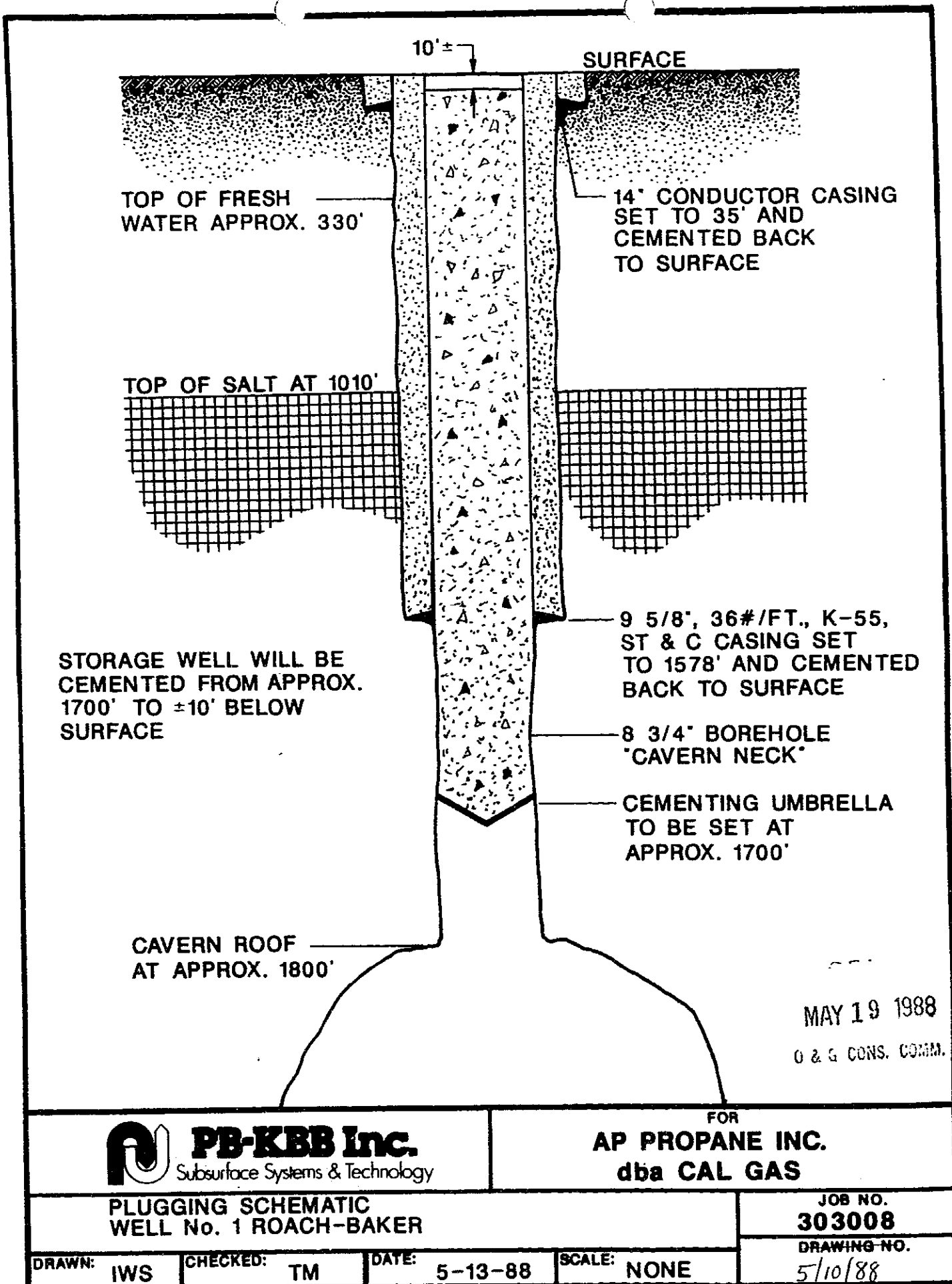
RECEIVED

MAY 19 1988

O & G CONS. COMM.

8. W.O.C. overnight.
9. Disconnect from aluminum or fiberglass tubing and pick up and run tubing to tag cement plug.
10. If plug has not been established, repeat steps 6 through 9.
11. When plug is established (tagged with tubing) pump and displace volume of Class "A" cement required to form a 50' plug.
12. Pull up 4 joints and reverse circulate to clean out tubing.
13. W.O.C. minimum 12 hours.
14. Tag the plug with tubing then cement the well to $\pm 10'$ below ground level using Class "A" neat cement or equivalent.
15. Rig down cementing equipment.
16. Rig down workover rig.
17. Remove wellhead and casinghead flange.
18. Excavate $\pm 5'$ deep around well.
19. Cut off 14" conductor and 9-5/8" casing and backfill hole.
20. Install abandoned well marker.

Note: See attached sketch for plugging schematic.



STATE OF ARIZONA
OIL AND GAS CONSERVATION COMMISSION

PERMIT 617

REPORT ON PROPOSED OPERATIONS
(GAS STORAGE PROJECT)

A P Propane dba Cal Gas
P.O. Box 28397
Sacramento, CA 95828

Phoenix, ARIZONA
Nov. 9, 1987

Your proposal to abandon well No. 1 Roach-Baker,
A.P.I. No. 02-013-20006, Section 2, T. 2N., R. 1W., G&SR B. & M.,
 field, West Glendale area, pool,
Maricopa County, dated 9/22/87, received 9/25/87 has been examined in conjunction with records
filed in this office.

THIS PROPOSAL IS APPROVED PROVIDED:

That this Commission is notified to witness the entire abandonment
operation.

BOND # 2210108

D. J. BRENNAN, Executive Director

By R. A. Yaman
Enforcement Director

A copy of this report and the proposal must be posted at the well site prior to commencing operations.

Records for work done under this permit are due within 30 days after the work has been completed
or the operations have been suspended.

APPLICATION TO PLUG AND ABANDON

SEP 25 1987

FIELD LP-Gas Storage ADDRESS P. O. Box 28397, Sacramento, CA 95828
OPERATOR AP PROPANE dba CAL GAS* WELL NO. Storage Well No. 1
Federal, State or Indian Lease Number
or Lessor's Name if Fee Lease John L. Roach & Arthur E. Baker
LOCATION 1110.61' FWL & 2440.0' FNL, Sec. 2, T-2N, R-1W, G&SRB&M
TYPE OF WELL LP-Gas Storage Well TOTAL DEPTH 3200 feet
(Oil, Gas or Dry Hole)
ALLOWABLE (If Assigned) N/A
LAST PRODUCTION TEST N/A OIL (Bbls.) WATER (Bbls.)
GAS (MCF) DATE OF TEST
PRODUCING HORIZON PRODUCING FROM TO

1. COMPLETE CASING RECORD.

Conductor 14 inch: 0 to 32 feet G.L.
Production Casing 9-5/8 inch, 36#, K-55, ST&C: 0 to 1578 feet G.L.

2. FULL DETAILS OF PROPOSED PLAN OF WORK.

See attached Plugging Program (dated 9-1-87)

* AP PROPANE dba CAL GAS (formerly California Liquids Gas Corporation)

DATE COMMENCING OPERATIONS Approximately November 1, 1987
NAME OF PERSON DOING WORK Fenix & Scisson, Inc. ADDRESS 6450 So. Lewis Ave.
Bridgeport III, Suite 300
Tulsa, OK 74136
Signature Tim M...
Title Project Manager
Address Fenix & Scisson, Inc., Agent for Cal Gas
Date September 22, 1987

Date Approved 11/6/87
STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION
By: R. A. Yana

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION
Application to Plug and Abandon
File Two Copies
Form No. 9

Permit No. 617

See Attached Report on Proposed Operations

4/82

Job #528
September 1, 1987

**CAL GAS CORPORATION
PLUGGING PROGRAM
CAL GAS STORAGE WELL No. 1**

RECEIVED
SEP 25 1987
O & G CORP. CALIF.

Cal Gas Storage Cavern No. 1 will be reactivated by plugging the existing storage well and directionally drilling a new reentry well into the cavern.

The following program presents the proposed steps for, 1) surveying the existing Cal Gas Storage Well No. 1 to determine downhole location of well and cavern, and 2) plugging the well. The program is recommended for use as a general guideline. Actual conditions encountered during the process will dictate the steps to be taken.

1. Move in and rig-up workover rig.
2. Rig-up logging truck and run directional survey to bridge plug.
(Bridge plug set at 1540 ft G.L. Note: Ground level = 1-foot below CHF.)
3. Rig-down logging truck.
4. Move in and rig-up cementing equipment.
5. Install pack-off assembly on wellhead and pipe to pit or tank for displaced water (casing volume approx. 120-bbls).
6. Run 2-7/8-inch (or 2-3/8-inch) tubing to within 5 feet of bridge plug at 1540 feet.
7. Cement the well from bridge plug to \pm 10 feet below ground level using Class "A" neat cement or equivalent.
8. Rig-down cementing equipment, and pull tubing from the well.
9. Rig-down workover rig.

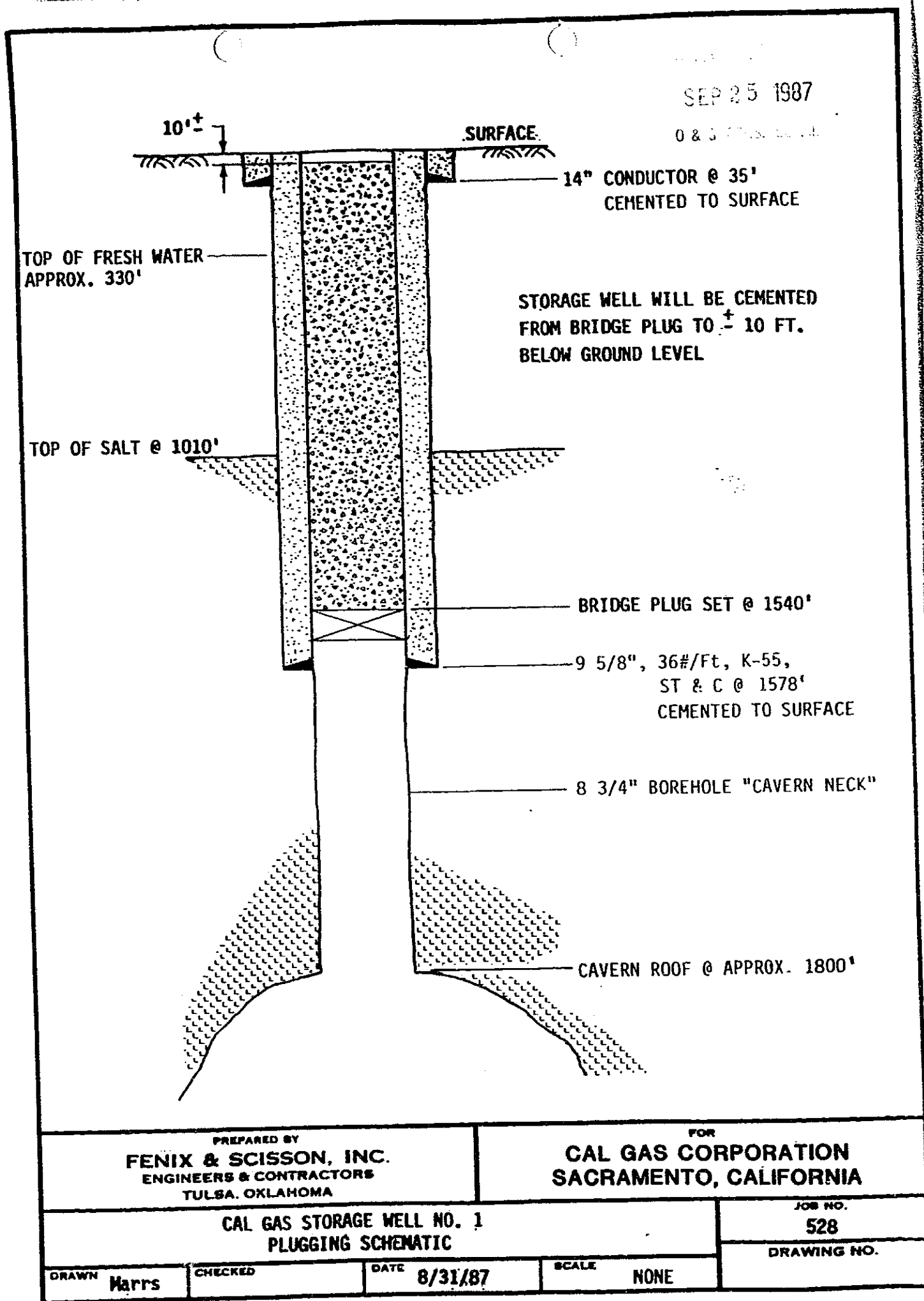
10. Remove wellhead and cut off casinghead flange.

11. Excavate to \pm 5 feet deep around well.

12. Cut off 14-inch conductor and 9-5/8-inch casing, and backfill hole.

13. Install abandoned well marker.

Note: See attached sketch for plugging schematic.



SUNDRY NOTICES AND REPORTS ON WELLS

JUN 11 1987

1. Name of Operator Cal Gas Corporation O & G
 2. OIL WELL ☐ GAS WELL ☐ OTHER ☒ (Specify) LP-Gas Storage Well
 3. Well Name Well No. 1 Roach-Baker
 Location 1110.61 FWL & 2440.0 FNL
 Sec. 2 Twp. 2N Rge. 1W County Maricopa, Arizona.
 4. Federal, State or Indian Lease Number, or lessor's name if fee lease N/A

5. Field or Pool Name LP-Gas Storage

6. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF ☐ PULL OR ALTER CASING ☐
 FRACTURE TREAT ☐ DIRECTIONAL DRILL ☐
 SHOOT OR ACIDIZE ☐ PERFORATE CASING ☐
 REPAIR WELL ☐ CHANGE PLANS ☐
 (OTHER) _____

SUBSEQUENT REPORT OF:

WATER SHUT-OFF ☐ MONTHLY PROGRESS ☐
 FRACTURE TREATMENT ☐ REPAIRING WELL ☒
 SHOOTING OR ACIDIZING ☐ ALTERING CASING ☐
 ABANDONMENT ☐
 (OTHER) _____

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

7. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

See attached remedial well workover report.

8. I hereby certify that the foregoing is true and correct.

Signed Don J. Johnson

Title Terminal Director Date 6-3-87

Permit No. 617

STATE OF ARIZONA
 OIL & GAS CONSERVATION COMMISSION
 Sundry Notices and Reports On Wells
 Form No. 26 File One Copy

Job #528

June 2, 1987

REMEDIAL WELL WORKOVER REPORT
CAL GAS CORPORATION
WELL No. 1 ROACH BAKER
(CAL GAS STORAGE WELL No. 1)

Workover dates: 5/19/87 - 5/27/87

Workover Objectives:

- 1) Locate and repair casing leak(s)
- 2) Pressure test casing

Workover Log: The following is a chronological summary of the workover activities.

05/18/87 J. A. Drake Workover Rig No. 24 arrived at 1800 hours.

05/19/87 Broke down wellhead and piping. Removed 6 inch propane line. Set 10 inch B.O.P. Moved in sub-base and aligned over hole. Rigged up workover rig.

05/20/87 Mo-te, Inc., Farmington, N.M., installed hold-down anchors. Finished rigging up workover rig. Rigged up casing crew tools, San Jaun Casing Service. Picked up one joint of 7 inch casing and screwed into donut hanger. Pulled 41 joints of 7 inch casing.

05/21/87 Finished pulling down 7 inch casing. Total of 88 joints pulled. Recovered all casing - bottom joint was mule-shoed. 7 inch casing appeared to be in good shape. Broke down casing tools. Rigged up drill pipe tongs and changed B.O.P. rams to 3-1/2 inch. Picked up Western 9-5/8 inch casing scrapper and ran to 1568 feet. Tripped out with scrapper. Rigged up Atlas Oilfield Services logging tools and lubricator. Ran gauge ring and tagged bottom at 2753 feet. Rigged up Sonarwire, Inc., sonar tool at 1730 hours and ran sonar survey of cavern on 10-foot stations.

05/22/87 Completed sonar survey at 0300 hours.

Summary of sonar survey from field report:

1. Depths (from G.L. - 1-foot below CHF)

9-5/8 inch Production Casing	1578 ft
Cavern Roof	approx. 1798 ft
Cavern Floor	approx. 2737 ft

- | | |
|-----------------------------------|-----------------------------|
| 2. Cavern interval | 939 ft |
| 3. Max. Diameter | approx. 175 ft
@ 2260 ft |
| 4. Cavern Volume above insolubles | 956,201 bbls |

Rigged up and ran Atlas casing inspection log (Vertilog). Log interpreted by Atlas engineer. Log indicated hole at 100-foot depth.

Instructed by Atlas engineer that well had to be fluid filled to run compensated neutron and cement bond log. Filled well to surface with fresh water. Rigged up and ran compensated neutron log. Log interpreted by Atlas engineer. Log indicated no trapped gas in water-bearing zones below 350 feet, verified top of salt at 1010 feet.

Rigged up and ran cement bond log. Atlas logger developed film while Western and rig crew ran and set packer. Cement bond log extended only up to 400 feet. Atlas engineer called that depth the fluid level. Pulled packer and drill pipe. Filled well with water and flowed continuously to insure well was liquid filled. Reran cement bond log. Log extended only up to 300 feet with well water filled. Atlas engineer checked with their Bakersfield office. They advised that well should be pressured in order to get bond log to surface. This would have been difficult with hole in casing. The decision was made to delay the cement bond log until casing was repaired and tested, possibly until Phase 2 of well workover.

05/23/87 Picked up Western packer and tripped in the hole. Set packer at 1565 feet. Started injecting brine with rig pump at approximately 4.5 BPM. Rigged up Western pump to pressure-up cavern. Shut-down rig pump. Western pump rate approximately 8 BPM, pumping pressure approximately 700 psi. Shut-down periodically to check static wellhead pressure. Pressured cavern to 630 psi surface pressure. Pumped approximately 1850 bbls brine-salinity 100% at 100°F. Bled brine to reduce surface pressure to 575 psi. Started two-hour pressure test of cavern and casing shoe at 1520 hours.

Test results were as follows:

Time	Test Pressure
1520 hours	575 psig
1535	575
1550	575
1605	575
1620	575
1635	575
1650	575
1705	575
1720	574

Pressure test of cavern and casing shoe was successful. Test was witnessed and approved by Rudy Ybarra, AZ O&GCC.

Released pressure and flowed brine to brine system piping. Diverted flow to Morton pit when pressure was low.

05/24/87 Finished flowing brine from cavern. Tripped out with packer. Tripped in with bridge plug and set at 1540 feet. (Decision was made to set plug in second joint from bottom. If set in bottom joint-risk twisting off while drilling out plug.) Displaced casing with fresh water. Tripped out with drill pipe and setting tool. Rigged up and ran Well Scan video survey. Survey detected hole at 100 feet, liquid level at 108 feet. Zero visibility below liquid level due to bubbles and debris - could not see casing walls. Ran survey to 886 ft and stopped. Pulled out, adjusted camera F-stop, and reran survey to fluid level. Rigged down video survey. Tripped in with packer and set at 149 feet (49 feet below hole).

Pressured up below packer with fresh water to 500 psi surface. Held test for one-hour. Pressure at end of test -510 psi. This test confirmed the 9-5/8 inch casing below 149 feet. Test was witnessed by Rudy Ybarra, AZ O&GCC.

Raised packer to 85 feet (15 feet above leak). Pressured up on top of packer to 500 psi - lost 125 psi in 10 minutes. Raised packer to 75 feet and pressured up on top to 500 psi - lost 55 psi in 30 minutes. Raised packer to 63 feet and pressured up on top to 500 psi - lost 30 psi in 30 minutes. (Suspected leaks in B.O.P. stack, flanges, and valves.) Layed down packer and went in hole with open ended drill pipe to 143 feet. Rigged Western up to cement and spotted 35 sacks neat cement Class H w/2% CaCl. Layed down drill pipe and squeezed to 100 psi. Western cementing engineer, estimated approximately 1-3/4 to 2 bbls of cement pumped behind casing. Held pressure at 100 psi. Shut in pressure and W.O.C. (waiting on cement) overnight.

05/25/87 W.O.C. overnight, approximately 11 hours. Pressure at 0600 hours - 75 psi. Pressured up with rig pump to 500 psi - lost 200 psi in 25 minutes (still suspected B.O.P. stack). Released pressure. Tagged top of cement at 85 feet. Picked up 8-1/2 inch re-tip bit, two-5 inch drill collars and drill pipe. Drilled cement from 85 feet to 121 feet. Pressured up with rig pump. Lost all pressure at 200 psi. Tripped out of the hole with bit. Ran 4 joints of drill pipe, 114 feet G.L. Rigged Western up to cement and spotted 35 sacks of cement. Pulled down drill pipe and squeezed to 950 psi and shutdown. Pressure broke back to 70 psi. Staged cement in 15 minute intervals. Final squeeze pressure - 500 psi. Shut in. CIP (cement in place) at 1445 hours. Estimated 5 bbls of cement behind casing. Total 7 bbls for both squeeze jobs. Pressure at 1800 hours - 430 psi. W.O.C. overnight.

05/26/87 Pressure at 0600 hours - 310 psi. Released pressure. Picked up 8-1/2 inch bit, drill collars, and drill pipe. Tagged cement at 102 feet. Drilled out cement from 102 feet to 155 feet. Tripped out with bit. Picked up packer and set in top joint at 15 feet to isolate wellhead and B.O.P. stack. Pressured to 505 psi and shut in. Conducted one-hour pressure test of casing between bridge plug and packer. Test results were as follows:

<u>Time</u>	<u>Test Pressure</u>
0941 hours	505 psi
0956	500
1015	500
1030	495
1041	490

Had drip leak at union during test. Test was witnessed and approved by Rudy Ybarra, AZ O&GCC. Layed down packer and drill pipe. Rigged down workover rig.

05/27/87 Finished rigging down Drake workover rig and moved off location. Job complete.

STATE OF ARIZONA

OIL AND GAS CONSERVATION COMMISSION
LPG STORAGE PROJECT

PERMIT 617

REPORT ON PROPOSED OPERATIONS

Cal Gas Corporation

8401 Gerber Road

P. O. Box 28397

Sacramento, CA 95828-0397

Phoenix, ARIZONA

Your proposal to test well No. 1 Roach-Baker,
A.P.I. No. 02-013-20006, Section 2, T. 2N, R. 1W, GSR B. & M.,
 field, Glendale area, pool,
Maricopa County, dated 5/4/87, received 5/6/87 has been examined in conjunction with records
filed in this office.

THIS PROPOSAL IS APPROVED PROVIDED:

1. Adequate blowout prevention equipment is installed, tested, and maintained in working condition throughout the testing of the well.
2. A status report of completed testing operations (Form 25) is filed with the Commission on a timely basis.
3. THIS COMMISSION SHALL BE NOTIFIED:
 - a. Immediately when testing operations commence.
 - b. To witness pressure-testing and cement-squeezing operations of the 9-5/8" casing.

BOND #210108

D. J. BRENNAN, Executive Director

By R. A. Hanna

Enforcement Director

A copy of this report and the proposal must be posted at the well site prior to commencing operations.

Records for work done under this permit are due within 30 days after the work has been completed or the operations have been suspended.

CAL GAS CORPORATION
REMEDIAL TESTING PROGRAM
CAL GAS STORAGE WELL NO. 1

The objectives of this testing program are: 1) locate the apparent leak/s and 2) conduct a mechanical integrity test of the well.

The program is recommended for use as a general guideline for the remedial workover. Actual conditions encountered during the process will dictate the required steps to be taken.

1. Move in and rig up workover rig and annular blowout preventer.
2. Pull and laydown 7-inch casing.
3. Run 9-5/8 inch casing scraper to casing set depth (1578-feet).
4. Rig up logging truck and run gage ring to bottom of 9-5/8 inch casing. Run the following logs:
 - a) Casing corrosion log
 - b) Sonar survey
 - c) Compensated density log *Gamma Ray*
 - d) Cement bond log

5/4/87

5. Run 9-5/8 inch packer on drill pipe and set above shoe (at approximately 1550 feet).
6. Conduct hydrostatic pressure test on casing shoe. Inject brine into drill pipe and pressure up to 570 psi surface pressure.
7. Shut-in and monitor pressure for a minimum of 2 hours.
8. Repeat steps 6 and 7 until test pressure holds steady. This confirms integrity of casing shoe. Pull drill pipe and packer.

(Note) If the hydrostatic test of casing shoe is inconclusive, further testing will be required to confirm integrity of shoe. Additional testing may include nitrogen/interface testing, radioactive tracer logs or other. If further testing identifies a casing shoe leak, a cement squeeze job will be required prior to running the 7-5/8 inch liner. The 9-5/8 inch casing will be perforated and cement pumped into the perforations.

9. Set a drillable bridge plug at a depth of 1550-feet.
10. Run a 9-5/8 inch packer on drill pipe. Set packer 50-feet above lowest corrosion area indicated by corrosion log.
11. Pump fresh water into drill pipe until shut-in pressure is 500 psi or until leak rate below packer is determined. If pressure holds, move packer up hole to a point 50-feet above next indicated area of casing corrosion. If leak is found go to step 12.

12. Close pipe rams and check casing above packer for possible leaks by pumping into 9-5/8 inch X drill pipe annulus. A standing shut-in pressure of 500 psi in the annulus indicates the 9-5/8 inch casing is free of leaks above the packer.
13. Rig up cementing equipment and squeeze cement into formation below the packer, leaving cement inside the 9-5/8 inch casing. A positive squeeze pressure of 500 psi is desirable.
14. Release pressure and reverse excess cement out of drill pipe. Pull drill pipe up hole until it is clear of the cement left in the casing. W.O.C. 4-hours.
15. If additional leaks are indicated in Step 12 move to next suspect area of corrosion and repeat Steps 11, 12, 13, and 14.
16. Continue pressure testing and repair sequence until all leaks are repaired.
17. Pull packer run 8-1/2 inch bit. Drill out cement in casing and circulate hole clean to top of the bridge plug.
18. Close well in on drill pipe and pressure 9-5/8 inch casing to 700 psi. Shut well in and monitor pressure for 2-hours. This confirms integrity of the 9-5/8 inch casing.

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

May 2, 1975

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is a summary of operations at Glendale:

OPERATIONS REPORT NO. 64
4-26-75 through 5-2-75

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

REMARKS:

See S. Webb's status report to Jesse Wyrick dated May 1, 1975.

Sincerely,

M. F. Haslet
M. F. Haslet
Construction Manager

MFH/sm

Enclosure

cc - Mr. W. E. Allen
Mr. E. B. Alleman

RECEIVED

MAY 05 1975

O & G CONS. COMM.

May 1, 1975

MEMORANDUM

TO: Jesse Wyrick

FROM: Steve Webb *SW*

SUBJECT: Weekly Cal-Gas Status Report (#225)

Solution Well No. 1

Ninety percent brine being injected into well at approximately 330 gpm. The total cavern volume to date is estimated to be 507,000 barrels.

Solution Well No. 2

Ran SLM and raised the 4-1/2" casing from 3,152' to 2,950' ground level. Fresh water is being injected into well at approximately 330 gpm and 730 psig. The total sump volume is estimated to be 78,000 barrels as of this date.

SW:wi

cc: K. Allen
E. B. Alleman

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

April 11, 1975

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 63
4-5-75 through 4-11-75

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

REMARKS:

See J. Wyrick's Weekly Status Report to K. Allen dated April 10, 1975.

Sincerely,

M. F. Haslet
M. F. Haslet
Assistant Operations
Supervisor

MFH/sm

Encl.

cc - Mr. W. E. Allen/
Mr. E. B. Alleman

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APR 15 1975
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WPA

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15809
TULSA, OKLAHOMA 74115

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

April 4, 1975

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 62
3-29-75 through 4-4-75

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

See M. Haslet's Weekly Status Report to J. Wyrick dated April 3, 1975.

Sincerely,

M. F. Haslet
M. F. Haslet
Assistant
Operations Supervisor

MPH/sm

Encl.

cc - Mr. W. E. Allen ✓
Mr. E. B. Alleman

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PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

FENIX & SCISSON, INC.
5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

March 28, 1975

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 61
3-22-75 through 3-28-75

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

See M. Haslet's Weekly Status Report to J. Wyrick dated March 28, 1975.

Sincerely,

M. F. Haslet
M. F. Haslet
Assistant
Operations Supervisor

MFH/sm
Encl.
cc - Mr. W. E. Allen
Mr. E. B. Alleman

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✓
FENIX & SCISSON, INC.
5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

March 21, 1975

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 60
3-14-75 through 3-21-75

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

See K. Covell's Weekly Status Report to J. Wyrick dated March 20, 1975.

Sincerely,

M. F. Haslet
M. F. Haslet
Assistant Operations
Supervisor

MFH/sm
Encl.
cc - Mr. W. E. Allen
Mr. E. B. Allen

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MAR 21 1975

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PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

FENIX & SCISSON, INC.

5605 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

March 7, 1975

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 59
3-1-75 through 3-7-75

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

WELL	DAILY AVERAGE VOLUME SPACE LEACHED (bbls)	VOLUME SPACE LEACHED	
		WEEKLY (bbls)	CUMULATIVE (bbls)
S.W. No. 1	206	1,445	481,613
S.W. No. 2	1,274	8,916	28,232

REMARKS:

See Gil Baker's Weekly Status Report dated March 6, 1975.

Sincerely,

M. F. Haslet
M. F. Haslet
Assistant
Operations Supervisor

MFH/sm
Encl.
cc - Mr. W. E. Allen
Mr. E. B. Alleman

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MAR 10 1975

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PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

FENIX & SCISSON, INC.
5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

February 28, 1975

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 58
2-22-75 through 2-28-75

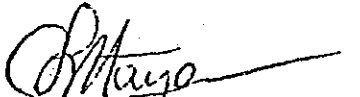
CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

WELL	DAILY AVERAGE VOLUME SPACE LEACHED (bbls)	VOLUME SPACE LEACHED	
		WEEKLY (bbls)	CUMULATIVE (bbls)
S.W. No. 1	167	1170	480,168
S.W. No. 2	1120	7843	19,316

REMARKS:

See Dean Kimbrough's Weekly Status Report dated February 27, 1975.

Sincerely,


C. L. Hayes
Operations Supervisor

CLH/sm
Encl.

cc - Mr. W. E. Allen
Mr. E. B. Alleman

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MAR 6 1975

O & G CONS. COMM.

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

February 21, 1975

PHONE (918) 835-9471
TWX NO. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 57
2-15-75 through 2-21-75

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

WELL	DAILY AVERAGE VOLUME SPACE LEACHED (bbls)	VOLUME SPACE LEACHED	
		WEEKLY (bbls)	CUMULATIVE (bbls)
S.W. No. 1	157	1,101	478,998
S.W. No. 2	916	6,412	11,473

REMARKS:

See Dean Kimbrough's Weekly Status Report dated February 20, 1975.

Sincerely,

M. F. Haslet
M. F. Haslet
Assistant
Operations Supervisor

MFH/sm

Encl.

cc - Mr. W. E. Allen
Mr. E. B. Alleman

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FENIX & SCISSON, INC.

5605 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

February 14, 1975

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 56
2-8-75 through 2-14-75

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

WELL	DAILY AVERAGE VOLUME SPACE LEACHED (bbls)	VOLUME SPACE LEACHED	
		WEEKLY (bbls)	CUMULATIVE (bbls)
S.W. No. 1	210	1,468	477,897
S.W. No. 2	723	5,061	5,061

REMARKS:

See Dean Kimbrough's weekly status report dated February 13, 1975.

Sincerely,

C. L. Hayes
C. L. Hayes
Operations Supervisor

CLH/sm
Encl.

cc - Mr. W. E. Allen
Mr. E. B. Alleman

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FEB 16 1975

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FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

February 7, 1975

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 55
2-1-75 through 2-7-75

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)	VOLUME SPACE LEACHED	
	WEEKLY (bbls)	CUMULATIVE (bbls)
1,100	5,498	476,429

REMARKS:

See Dean Kimbrough's Weekly Progress Report dated February 6, 1975.

Sincerely,

M. F. Haslet

M. F. Haslet
Assistant
Operations Supervisor

MFH/sm

Encl.

cc - Mr. W. E. Allen✓
Mr. E. B. Alleman

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FEB 10 1975

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FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

January 31, 1975

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 54
1-25-75 through 1-31-75

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)	VOLUME SPACE LEACHED	
	WEEKLY (bbls)	CUMULATIVE (bbls)
1,194	8,357	470,931

REMARKS:

See Dean Kimbrough's Weekly Progress Report dated January 30, 1975.

Sincerely,

C. L. Hayes
C. L. Hayes
Operations Supervisor

CLH/sm
Encl.
cc - Mr. W. E. Allen /
Mr. E. B. Alleman

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FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

January 24, 1975

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 53
1-18-75 through 1-24-75

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)	VOLUME SPACE LEACHED	
	WEEKLY (bbls)	CUMULATIVE (bbls)
1,737	12,160	462,574

REMARKS:

See Dean Kimbrough's Weekly Progress Report dated January 23, 1975.

Sincerely,

M. F. Haslet
M. F. Haslet
Assistant
Operations Supervisor

MFH/sm
Encl.
cc - Mr. W. E. Allen
Mr. E. B. Alleman

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FENIX & SCISSON, INC.

8805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

PHONE (918) 835-9471
TWX NO. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

January 17, 1975

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 52
1-11-75 through 1-17-75

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)	VOLUME SPACE LEACHED	
	WEEKLY (bbls)	CUMULATIVE (bbls)
1,089	7,622	450,414

REMARKS:

See Dean Kimbrough's Weekly Progress Report dated January 16, 1975.

Sincerely,

M. F. Haslet
M. F. Haslet
Assistant
Operations Supervisor

MFH/sm
Encl.
cc - Mr. W. E. Allen
Mr. E. B. Alleman

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JAN 17 1975

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FENIX & SCISSON, INC.

5605 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

January 10, 1975

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 51
1-4-75 through 1-10-75

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)	VOLUME SPACE LEACHED	
	WEEKLY (bbls)	CUMULATIVE (bbls)
1,221	8,546	442,792

REMARKS:

See Dean Kimbrough's Weekly Progress Report dated January 9, 1975.

Sincerely,

C. L. Hayes
C. L. Hayes
Operations Supervisor

CLH/sm
Encl.
cc - Mr. W. E. Allen
Mr. E. B. Alleman

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JAN 13 1975

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FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

January 3, 1975

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 50
12-28-74 through 1-3-75

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)	VOLUME SPACE LEACHED	
	WEEKLY (bbls)	CUMULATIVE (bbls)
94	657	434,246

REMARKS:

See Ken Covell's Weekly Progress Report dated January 3, 1975.

Sincerely,

M. F. Haslet
M. F. Haslet
Assistant
Operations Supervisor

MFH/sm
Encl.
cc - Mr. W. E. Allen
Mr. E. B. Alleman

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JAN 6 1974

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FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

December 27, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 49
12-21-74 through 12-27-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(bbls)

13

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(bbls) (bbls)

94

433,589

REMARKS:

See Dean Kimbrough's Weekly Progress Report dated December 26, 1974.

Sincerely,

M. F. Haslet
M. F. Haslet
Assistant
Operations Supervisor

MFH/sm
Encl.

cc - Mr. W. E. Allen ✓
Mr. E. B. Alleman

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FENIX & SCISSON, INC.
5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

December 20, 1974

PHONE (918) 835-9471
TELEX NO. (918) 923-3131
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 48
12-14-74 through 12-20-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)	VOLUME SPACE LEACHED	
	WEEKLY (bbls)	CUMULATIVE (bbls)
42	296	433,495

REMARKS:

See Dean Kimbrough's Weekly Progress Report dated December 19, 1974.

Sincerely,

M. F. Haslet

M. F. Haslet
Assistant
Operations Supervisor

MFH/sm
Encl.

cc - Mr. W. E. Allen ✓
Mr. E. B. Alleman

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FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

PHONE (918) 835-9471
TWX NO. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

December 13, 1974

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 47
12-7-74 through 12-13-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)	VOLUME SPACE LEACHED	
	WEEKLY (bbls)	CUMULATIVE (bbls)
176	1,229	433,199

REMARKS:

See Dean Kimbrough's Weekly Progress Report dated December 12, 1974.

Sincerely,

M. F. Haslet
M. F. Haslet
Assistant
Operations Supervisor

MFH/sm
Encl.
cc - Mr. W. E. Allen
Mr. E. B. Alleman

REC'D

DEC 17 1974

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DEC 17

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WDP

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

December 6, 1974

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 46
11-23-74 through 12-6-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(bbls)

912

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(bbls) (bbls)

12,773

431,970

REMARKS:

See Ken Covell's Weekly Progress Report dated December 5, 1974.

Sincerely,

for *G. H. Medley*
M. F. Haslet
Assistant
Operations Supervisor

MFH/sm

Encl.

cc - Mr. W. E. Allen✓
Mr. E. B. Alleman

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FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

November 22, 1974

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 45
11-16-74 through 11-22-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(bbls)

982

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(bbls) (bbls)

6,876

419,197

REMARKS:

See Ken Covell's Weekly Progress Report dated November 21, 1974.

Sincerely,

M. F. Haslet

M. F. Haslet
Assistant
Operations Supervisor

MFH/sm

Encl.

cc - Mr. W. E. Allen✓
Mr. E. B. Alleman

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WA

FENIX & SCISSON, INC.

5605 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

November 15, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 45
11-9-74 through 11-15-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)	VOLUME SPACE LEACHED	
	WEEKLY (bbls)	CUMULATIVE (bbls)
186	1,305	412,321

REMARKS:

See Ken Covell's Weekly Progress Report dated November 14, 1974.

Sincerely,

M. F. Haslet
M. F. Haslet
Assistant
Operations Supervisor

MFH/sm
cc - Mr. W. E. Allen ✓
Mr. E. B. Alleman

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NOV 18 1974

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WJH

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

November 8, 1974

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 44
11-2-74 through 11-8-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)	VOLUME SPACE LEACHED	
	WEEKLY (bbls)	CUMULATIVE (bbls)
639	4,470	411,016

REMARKS:

See Ken Covell's Weekly Progress Report dated November 7, 1974.

Sincerely,

M. F. Haslet
M. F. Haslet
Assistant
Operations Supervisor

MFH/sm
cc - Mr. W. E. Allen✓
Mr. E. B. Alleman

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O & G CONS. COMM.

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

November 1, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 43
10-26-74 through 11-1-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)	VOLUME SPACE LEACHED	
	WEEKLY (bbls)	CUMULATIVE (bbls)
751	5,258	406,546

REMARKS:

See Ken Covell's Weekly Progress Report dated October 31, 1974.

Sincerely,

M. F. Haslet

M. F. Haslet
Assistant
Operations Supervisor

MFH/sm
cc - Mr. W. E. Allen
Mr. E. B. Alleman

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FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

October 25, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 42
10-19-74 through 10-25-74


CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)	VOLUME SPACE LEACHED	
	WEEKLY (bbls)	CUMULATIVE (bbls)
1,266	8,862	391,612

REMARKS:

See Ken Covell's Weekly Progress Report dated October 17, 1974.

Sincerely,


C. L. Hayes
Operations Supervisor

CLH/sm
cc - Mr. W. E. Allen
Mr. E. B. Alleman

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WTH

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. BOX 15609
TULSA, OKLAHOMA 74115

October 18, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 41
10-12-74 through 10-18-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(bbls)

1,266

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(bbls) (bbls)

8,862

391,612

REMARKS:

See Ken Covell's Weekly Progress Report dated October 17, 1974.

Sincerely,

M. F. Haslet

M. F. Haslet
Assistant
Operations Supervisor

MFH/sm

cc - Mr. W. E. Allen✓
Mr. E. B. Alleman

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P. O. BOX 15609
TULSA, OKLAHOMA 74115

FENIX & SCISSON, INC.
5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

October 11, 1974

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 40
10-5-74 through 10-11-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)
--

1,503

VOLUME SPACE LEACHED
WEEKLY (bbls)
CUMULATIVE (bbls)

10,523

382,750

REMARKS:

See Ken Covell's Weekly Progress Report dated October 10, 1974.

Sincerely,

C. L. Hayes
C. L. Hayes
Operations Supervisor

CLH/sm
cc - Mr. W. E. Allen ✓
Mr. E. B. Alleman

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WA

FENIX & SCISSON, INC.

5605 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15809
TULSA, OKLAHOMA 74115

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

October 4, 1974

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 39
9-28-74 through 10-4-74

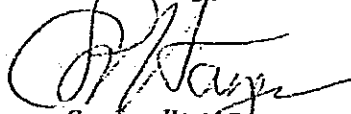
CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)	VOLUME SPACE LEACHED	
	WEEKLY (bbls)	CUMULATIVE (bbls)
1,527	10,689	372,227

REMARKS:

See Ken Covell's Weekly Progress Report dated October 4, 1974

Sincerely,


C. L. Hayes
Operations Supervisor

CLH/sm
cc - Mr. W. E. Allen
Mr. E. B. Alleman

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OCT 7 1974

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W R

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

September 27, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 38
9-21-74 through 9-27-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(bbls)

1,437

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(bbls) (bbls)

10,056

361,538

REMARKS:

See Ken Covell's Weekly Progress Report dated September 26, 1974.

Sincerely,

C. L. Hayes

C. L. Hayes
Operations Supervisor

CLH/sm

cc - Mr. W. E. Allen
Mr. E. B. Alleman

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SEP 30 1974

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W.P.

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

September 20, 1974

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 37
9-14-74 through 9-20-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(bbls)

1,600

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(bbls) (bbls)


11,201

351,482

REMARKS:

See Dean Kimbrough's Weekly Progress Report dated September 19, 1974.

Sincerely,


C. L. Hayes
Operations Supervisor

CLH/sm

cc - Mr. W. E. Allen ✓
Mr. E. B. Alleman

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FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

PHONE (918) 835-9471
TWX NO. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

September 13, 1974

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 36
9-7-74 through 9-13-74

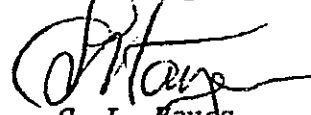
CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)	VOLUME SPACE LEACHED	
	WEEKLY (bbls)	CUMULATIVE (bbls)
1,689	11,823	340,281

REMARKS:

See Dean Kimbrough's Weekly Progress Report dated September 12, 1974.

Sincerely,


C. L. Hayes
Operations Supervisor

CLH/sm

cc - Mr. W. E. Allen ✓
Mr. E. B. Alleman

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O & G CONS. COMM.

WA

FENIX & SCISSON, INC.

5205 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

September 6, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 35
8-31-74 through 9-6-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(bbls)

1,611

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(bbls) (bbls)

11,280

328,458

REMARKS:

See Dean Kimbrough's Weekly Progress Report dated September 5, 1974.

Sincerely,



C. L. Hayes
Operations Supervisor

CLH/sm

cc - Mr. W. E. Allen✓
Mr. E. B. Alleman

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O & G Lons. Comm.

WPA

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

August 30, 1974

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 34
8-24-74 through 8-30-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(bbls)

1,540

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(bbls) (bbls)

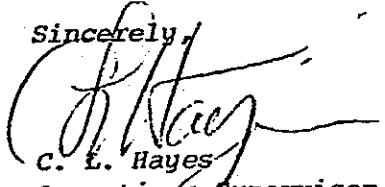
10,777

317,178

REMARKS:

See Dean Kimbrough's Weekly Progress Report dated August 30, 1974.

Sincerely,


C. L. Hayes
Operations Supervisor

CLH/sm
cc - Mr. W. E. Allen✓
Mr. E. B. Alleman

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FENIX & SCISSON, INC.

5605 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

August 23, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 33
8-17-74 thorough 8-23-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(bbls)

1,501

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(bbls) (bbls)

10,509


306,401

REMARKS:

The six inch product line has been successfully tested to 1820 psi. Pigs have been run to clear the line of rust, scale and water.

Storage well no. 1 now has 1,703,201 gallons of propane in storage. A net of 1,697,833 gallons of product has been injected effective August 23.

Sincerely,


C. L. Hayes
Operations Supervisor

CLH/sm

cc - Mr. W. E. Allen ✓
Mr. E. B. Alleman

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AUG 26 1974

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WA

FENIX & SCISSON, INC.

5005 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

August 16, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT No. 32
8-10-74 through 8-16-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(bbls)

1,605

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(bbls) (bbls)

11,238

295,892

REMARKS:

All tie-ins on the pipe line have been completed and we expect to start hydrostatic testing Monday, August 19.

Storage well No. 1 now has 1,177,977 gallons of propane in storage. A net of 1,172,609 gallons of product has been injected effective August 16.

Sincerely,

E. L. Hayes
E. L. Hayes

Operations Supervisor

CLH/vj

cc - Mr. W. E. Allen
Mr. E. B. Alleman

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AUG 19 1974
O & G CONS. COMM.

W H
PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PHONE (918) 835-9471
TWX NO. (910) 845-2109
CABLE ADDRESS: FENSON TULSA

August 9, 1974

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 31
8-3-74 through 8-9-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)
--

1,690

VOLUME SPACE LEACHED	
WEEKLY (bbls)	CUMULATIVE (bbls)

11,829

284,654

REMARKS:

See Dean Kimbrough's weekly progress report dated August 9, 1974.

Sincerely,

C. L. Hayes

C. L. Hayes
Operations Supervisor

CLH/sm
cc - Mr. W. E. Allen
Mr. E. B. Alleman

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AUG 12 1974
O & G CONS. CO.

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5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

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PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

PHONE (918) 835-9471
TWX NO. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

August 2, 1974

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 30
7-27-74 through 8-2-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)
--

1,956

WEEKLY (bbls)	VOLUME SPACE LEACHED CUMULATIVE (bbls)
------------------	---

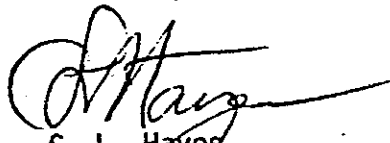
13,692

272,825

REMARKS:

See Ken Coveil's weekly Progress Report dated August 1, 1974.

Sincerely,


C. L. Hayes
Operations Supervisor

CLH/sm
cc - Mr. W. E. Allen
Mr. E. B. Allen

WA

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

July 26, 1974

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 29
7-20-74 through 7-26-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(bbls)

2,231

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(bbls) (bbls)

15,614

259,133

REMARKS:

See Dean Kimbrough's weekly Progress Report dated July 25, 1974.

Sincerely,

C. L. Hayes
C. L. Hayes
Operations Supervisor

CLH/sm
cc-Mr. W. E. Allen
Mr. E. B. Alleman

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JUL 29 1974

D & G CONS. COMM.

W R
PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

FENIX & SCISSON, INC.
5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

July 19, 1974

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 28
7-13-74 through 7-19-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)
--

1,868

VOLUME SPACE LEACHED	
WEEKLY (bbls)	CUMULATIVE (bbls)

13,075

243,519

REMARKS:

A sonar survey was made of Storage Well No. 1 during workover of the well for conversion to product storage. Enclosed is a copy of the report. Results of their survey show approximately 233,900 barrels of space between the 1800 to 2347 foot interval. The cavern is now ready to store product.

Sincerely,


C. L. Hayes
Operations Supervisor

CLH/sm
Encl.
cc - Mr. W. E. Allen
Mr. E. B. Alleman

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JUL 22 1974

O & G CORP. COMM.

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

July 12, 1974

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 27
7-6-74 through 7-12-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(bbls)

1,004

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(bbls) (bbls)

7,028

230,444

REMARKS:

See Dean Kimbrough's weekly Progress Report dated July 11, 1974.

Sincerely,

C. L. Hayes

C. L. Hayes
Operations Supervisor

CLH/sm
Encl.

cc - Mr. W. E. Allen ✓
Mr. E. B. Alleman

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JUL 15 1974

O & B CORP. TULSA

W R
FENIX & SCISSON, INC.
5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

July 5, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P.O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 26
6-29-74 through 7-5-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA


DAILY AVERAGE VOLUME SPACE LEACHED (bb1s)
1,655

VOLUME SPACE LEACHED	
WEEKLY (bb1s)	CUMULATIVE (bb1s)
11,588	223,416

REMARKS:

See Dean Kimbrough's weekly Progress Report dated July 3, 1974.

Sincerely,


C. L. Hayes
Operations Supervisor

CLH/vj
Encl.
cc - Mr. W. E. Allen
Mr. E. B. Alleman

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O & G CONS. COMM.

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FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

June 28, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 25
6-22-74 through 6-28-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)
--

1,566

VOLUME SPACE LEACHED WEEKLY (bbls)	CUMULATIVE (bbls)
---	----------------------

10,961

211,828

REMARKS:

See Dean Kimbrough's weekly Progress Report dated June 27, 1974.

Sincerely,


C. L. Hayes
Operations Supervisor

CLH/sd
Encl.

cc - Mr. W. E. Allen
Mr. E. B. Alleman

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JUL 01 1974

O & G CONS. COMM.

WV

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

June 21, 1974

PHONE (918) 835-9471
TWX No. (910) 645-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 24
6-15-74 through 6-21-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(bbls)

1,234

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(bbls) (bbls)

8,641

200,867

REMARKS:

See Charles Hamilton's weekly Progress Report dated June 21, 1974.

Sincerely,


C. L. Hayes
Operations Supervisor

CLH/sd
Encl.

cc - Mr. W. E. Allen ✓
Mr. E. B. Alleman

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JUN 24 1974
O & G CONS. COMM.

WAX

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

June 14, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 23
6-8-74 through 6-14-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(bbls)

1,710

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(bbls) (bbls)

11,971

192,226

REMARKS:

Leaching operations have been maintained through continued use of centrifugal pumps which pick up tailing water out of the nearby irrigation ditch.

Water Well No. 2 has been completed and pump tested. A Gilbert unit is now on location, pulling the test pump, and preparing to run our pump. The well should be completed early next week.

Sincerely,

M. F. Haslet
M. F. Haslet

Ass't. Operations Supervisor

MFH/sd
Encl.

cc - Mr. W. E. Allen ✓
Mr. E. B. Alteman

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JUN 17 1974

O & G CONS. COMM.

WY
PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

FENIX & SCISSON, INC.
5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

June 7, 1974

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JUN 10 1974

O & G CONS. COMM.

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn W. Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 22
6-1-74 through 6-7-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(bbls)

1,273

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(bbls) (bbls)

8,912

180,255

REMARKS:

Leaching operations have been maintained through continued use of centrifugal pumps which pick up tailing water out of the nearby irrigation ditch.

Water Well No. 2 has been completed and pump tested and now awaits an Arizona Service power connection, which should be accomplished early next week. We do not have a Gilbert unit definitely scheduled for Monday, but they have told us they will try to run column pipe and pump into the well early next week.

The new well was developed during the week, by producing water at beginning rates of 500 gpm and finishing this development period with a rate of 1471 gpm. The pumping fluid level varied from 485 feet to 548 feet during the test. A final 24-hour test was completed this morning, with the following results:

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O & G CONS. COMM.

Mr. Glenn W. Sorensen
June 7, 1974
Page Two

Pump setting depth	600 feet
Pumping rate	1,000 gpm
Pumping fluid level	524 feet

The well made no sand during this 24-hour period. Enclosed is an engineering projection of the well's deliverability, based on results of the development and final testing of the well. As shown, the well can deliver up to 1400 gpm with a pumping depth of 600 feet.

Sincerely,


C. L. Hayes
Operations Supervisor

CLH/sd
Encl.

cc - Mr. W. E. Allen ✓
Mr. E. B. Alleman

104
FENIX & SCISSON, INC.
5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

May 31, 1974

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JUN 4 1974

O & G CONS. COMM.

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn W. Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 21
5-25-74 through 5-31-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)	VOLUME SPACE LEACHED	
	WEEKLY (bbls)	CUMULATIVE (bbls)
1,508	10,554	171,343

REMARKS:

See Charles Hamilton's enclosed report.

Sincerely,

C. L. Hayes

for C. L. Hayes
Operations Supervisor

CLH/sd
Encl.

cc - Mr. W. E. Allen ✓
Mr. E. B. Alleman

May 31, 1974

MEMORANDUM

TO: Jesse Wyrick
FROM: Charles Hamilton
SUBJECT: Weekly CAL-GAS Status Report (#225)

CAVERN: Cavern volume has reached 171,343 barrels or 28.5% of gross design through May 30, 1974. Large size insolubles are no longer evident in the brine returns.

WASH PLANT: Power poles and transformers for No. 2 water well have been set. Pump test expected to take place on June 3, 1974. Completion date of well expected June 6, 1974.

The No. 1 water well output has fallen off to only 80 to 90 gpm. Water through portable centrifugals taking suction from an irrigation ditch supplements the above supply.

PRODUCT HANDLING FACILITIES: All valves, flanges, and studbolts have been ordered. Pipe fittings, gaskets, pressure gauges, and thermometers will be ordered the first of next week.

Dehydrator drawings are being reviewed, and foundation design, piping design and location of these vessels should be finished early next week.

All bids from pipeline contractors have been returned. Two of the three contractors responded "no bid". We will recommend to CAL-GAS to go with the third bid.

CH:wi

cc: K. Allen
A. Medley
C. Hayes
K. Covell
G. Alleman

WA

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

May 24, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 20
5-18-74 through 5-24-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)
--

1,888

VOLUME SPACE LEACHED WEEKLY (bbls)	CUMULATIVE (bbls)
---	----------------------

13,216

160,789

REMARKS:

Leaching operations are now proceeding without interruption. Water Well No. 1 is producing at the rate of 200 gpm, necessitating continued supplement with a small centrifugal pump from the irrigation ditch. It is hoped that Water Well No. 2 will be operational by June 1.

Sincerely,


C. L. Hayes
Operations Supervisor

CLH/sd
Encl.

cc - Mr. W. E. Allen ✓
Mr. E. B. Alleman

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MAY 28 1974
O & G CONS. COMM.

W A

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

May 17, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 19
5-11-74 through 5-17-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)	VOLUME SPACE LEACHED WEEKLY (bbls)	CUMULATIVE (bbls)
1,339	9,376	147,573

REMARKS:

Leaching operations are progressing satisfactorily. Both fresh water injection pumps are now being utilized with subsequent increase in wash rates. Injection pump No. 2 is being run with throttle valve three-quarters closed, thus limiting pumping capacity of this pump. A new sheave combination will be tried, to find one which permits us to run both pumps efficiently.

Water well No. 2 has been drilled and completed. While air jetting the well during the gravel packing procedure, the well produced at an estimated rate of 1,000 gpm. Final development pumping and testing of the well is scheduled for the latter part of next week, or early the following week.

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MAY 20 1974

O & G CONS. COMM.

Mr. Glenn Sorensen
May 17, 1974
Page Two

An electrical power contract for Water Well No. 2 has been executed. Arizona Public Service estimates that they can deliver the necessary power by May 31, 1974. All elements necessary for operation of the well should be on site by this date.

Sincerely,


C. L. Hayes
Operations Supervisor

CLH:gd

Encl.

cc: Mr. W. E. Allen
Mr. E. B. Alleman

WDR

FENIX & SCISSON, INC.

8605 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

May 10, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 18
5-4-74 through 5-10-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)	WEEKLY (bbls)	VOLUME SPACE LEACHED CUMULATIVE (bbls)
440	3,080	138,197

REMARKS:

Attempted to run sonar survey and found suspended casing against the wall of the cavern. Apparently, the original hole through the salt was not truly vertical and gravity is forcing the suspended casing against the wall of the developing cavern. This condition has caused development of a ledge immediately below the 4 1/2-inch casing where insoluble material accumulates until caught in the stream of brine returning to the surface.

It would be desirable to lower the 4 1/2-inch casing below the ledge and back into the sump so that sump space would be accessible for early propane storage. The first attempt to lower the 4 1/2-inch casing was unsuccessful and the bottom 500 feet of casing was lost in the cavern. The 4 1/2-inch

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MAY 13 1974
O & G CONS. COMM.

Mr. Glenn Sorensen
May 10, 1974
Page Two

casing is now being rerun with a specially bent and beveled bottom joint
in an attempt to by-pass the ledge.

Sincerely,

A. H. Medley

A. H. Medley
Projects Director

AHM/sd
Encl.

cc - Mr. W. E. Allen ✓
Mr. E. B. Alleman

1054

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

May 3, 1974

PHONE (918) 835-9471
TWX NO. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 17
4-27-74 through 5-3-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(bbls)

1,458

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(bbls) (bbls)

10,209

134,317

REMARKS:

Operations are satisfactory. See Charles Hamilton's attached report.

Sincerely,


C. L. Hayes
Operations Supervisor

CLH/sd
Attach.

cc - Mr. W. E. Allen ✓
Oil & Gas Conservation Commission
4515 North 7th Avenue
Phoenix, Arizona 85013

Mr. E. B. Alleman

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MAY 05 1974

O & G CONS. COMM.

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET

TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

April 26, 1974

PHONE (918) 835-9471
TWX NO. (910) 843-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 16
4-20-74 through 4-26-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA


DAILY AVERAGE VOLUME SPACE LEACHED (bbls)	VOLUME SPACE LEACHED	
	WEEKLY (bbls)	CUMULATIVE (bbls)
1,511	10,576	124,108

REMARKS:

Water Supply Well No. 1 is operational, producing approximately 300 gpm. While irrigation tailing water is available, fresh water injection pump No. 2 will be used as much as possible. The limiting factor will be the effect on brine effluent salinity. The Southwest Salt Company agreement contains a requirement that produced brine salt concentration be 98% or greater.

A preliminary test of the possible storage utility of Southwest Salt Company's No. 2 Brine Well will be made this day.

Sincerely,


C. L. Hayes
Operations Supervisor

CLH/sd
Encl.

cc - Mr. W. E. Allen
Oil & Gas Conservation Commission
4515 North 7th Avenue
Phoenix, Arizona 85013

Mr. E. B. Allenman

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O & G Cons. Comm.

April 25, 1974

MEMORANDUM

TO: Jesse Wyrick
FROM: Charles Hamilton
SUBJECT: Weekly CAL-GAS Status Report (#225)

CAVERN

Cavern volume has reached 122,562 barrels or 22.9% of gross design. Salinity has risen to 99-100% saturation in the last two days which exceeds the 98% minimum required by contract to satisfy S.W. Salt Company.

WASH PLANT

S.W. Salt Company's well has tended to salt up on several occasions requiring Gene to reverse circulate our well to bring our brine wellhead pressures back to normal. Our brine effluent is now going to S.W. Salt Company's northeast pit.

The water well pump has produced up to 285 gpm since being reinstalled and seems to be giving clearer water at the lower depth setting. Static and pumping fluid levels of 443 feet and 462 feet, respectively, have been recorded.

BC&M Drilling Company gave the only responsive bid received to drill Water Supply Well No. 2. Surface casing is scheduled to be set today with drilling rig to move in April 29.

PIPELINE

About 1/3 of the 6-inch pipeline has been delivered to the cavern site.

Construction specifications for contractors are still being reviewed.

MEMORANDUM

-2-

April 25, 1974

DEHYDRATORS

Maloney-Crawford's quotation has been reviewed and a verbal order placed today for the dual vessel unit. Rupture discs rated at 480# will be provided in each unit to accommodate flow rates at full wellhead pressure. A single relief valve in the upstream piping rated for 600 gpm and 400 psig will provide normal relief.

CH:wi

cc: K. Allen
A. Medley
✓ C. Hayes
K. Covell
G. Alleman

W W

FENIX & SCISSON, INC.

2805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

April 19, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 15
4-13-74 through 4-19-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)
--

1,325

VOLUME SPACE LEACHED WEEKLY (bbls)	CUMULATIVE (bbls)
---	----------------------

9,273

113,532

REMARKS:

The raw water supply well pump was pulled and the slotted tail pipe found to be approximately 85 percent plugged. The small (300 gpm) pump has been re-run and the motor is being set today. Leaching operations have continued with use of irrigation tailing water and centrifugal pumps. We will utilize the raw water well source upon start-up of this system, sometime today.

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O & G COM. COMM.

Sincerely,

C. L. Hayes
C. L. Hayes
Operations Supervisor

CLH/sd

cc - Mr. W. E. Allen
Oil & Gas Conservation Commission
4515 North 7th Avenue
Phoenix, Arizona 85013

Mr. E. B. Alleman

W W

FENIX & SCISSON, INC.
5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

April 19, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 15
4-13-74 through 4-19-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)	VOLUME SPACE LEACHED	
	WEEKLY (bbls)	CUMULATIVE (bbls)
1,325	9,273	113,532

REMARKS:

The raw water supply well pump was pulled and the slotted tail pipe found to be approximately 85 percent plugged. The small (300 gpm) pump has been re-run and the motor is being set today. Leaching operations have continued with use of irrigation tailing water and centrifugal pumps. We will utilize the raw water well source upon start-up of this system, sometime today.

RECEIVED

O & G CON. COMM.

Sincerely,

C. L. Hayes
C. L. Hayes
Operations Supervisor

CLH/sd

cc - Mr. W. E. Allen
Oil & Gas Conservation Commission
4515 North 7th Avenue
Phoenix, Arizona 85013

Mr. E. B. Alleman

WPA
MEMO TO: Jesse Wyrick
File #225

April 19, 1974

FROM: Charles Hamilton *CH*
SUBJECT: Weekly Cal Gas Status Report

Cavern:

Cavern volume has reached 112,080 barrels. Percentage complete has been being reported as % of net design. Hencesforth, % of gross design will be reported, which to date is 18.8%. Salinity continues its reluctance to rise at an expected rate. While it has fluctuated upward to 97%, daily averages are still running around 95%.

Wash Plant:

The 300 gpm water well pump has been reinstalled after refurbishing. The electric motor is being installed after having been rewound and the well should be operational today. The 1/2" air line was also fished out of the well intact.

The new water well location has been staked and a drilling rig is expected to be available April 22.

The need to inject propane from transports into the cavern at rates in excess of blanket pump capability in the latter part of June (prior to completion of the pipeline) has been established. Steps are being evaluated to either jury rig one of the wash pumps or one of the propane pipeline pumps at the cavern site to accomplish this feat.

Pipeline:

The construction specification package to be sent to pipeline contractors for bidding is currently being reviewed.

The decision was made to store the 6" pipeline pipe now ready for shipment at the cavern site to provide greater security prior to installation. Wood sills have been strung on site to accommodate the pipe on arrival.

Dehydrators:

Maloney-Crawford submitted their revised quotation yesterday; review of their proposal with them will be made today. Assuming all is in order, a purchase order should be issued today or Monday.

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O & G CORP. COMM.

Memo to Jesse Wyrick
Weekly Cal Gas Status Report
April 19, 1974
Page Two

Miscellaneous:

The preliminary P & I diagram has been modified and is currently being updated by drafting for issuance to Cal Gas.

CH/bc

cc: K. Allen
A. Medley
C. Hayes ✓
K. Covell
G. Alleman

W F

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

April 12, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 14
4-6-74 through 4-12-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(bbls)

1,095

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(bbls) (bbls)

7,665

104,259

REMARKS:

Leaching operations continue with use of irrigation tailing water, despite recurring difficulties with the raw water supply system. Arrangements are being made to drill a second raw water supply well. We presently estimate that a contractor can have rig and other needed equipment available to drill this well by April 18.

All other systems are operating in a satisfactory manner and needed fittings have been procured to make an initial test of the fitness of Southwest Salt Company's No. 2 Brine Well for hydro-carbon storage. Work will proceed on this well test at the convenience of higher priority items already scheduled.

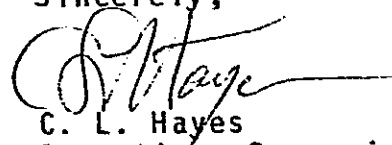
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APR 14 1974
O & S CONS. COMM.

Mr. Glenn Sorensen
April 12, 1974
Page Two

Enclosed is a copy of Mr. Charles Hamilton's Weekly Progress Report on this project. This report will be issued routinely from this time forward.

Sincerely,


C. L. Hayes
Operations Supervisor

CLH/sd

cc - Mr. W. E. Allen✓
Oil & Gas Conservation Commission
4515 North 7th Avenue
Phoenix, Arizona 85013

Mr. E. B. Alleman

MEMO TO: Jesse Wyrick
File #225

April 12, 1974

FROM: Charles Hamilton *CH*

SUBJECT: Weekly Cal Gas Status Report

Cavern:

Cavern volume has reached 102,971 barrels or 19.2% of design. Salinity seems to be moving gradually upward (presently 94-95%) but not as fast as expected.

Wash Plant:

The water well electric motor burned out early April 7. Portable gasoline/propane driven centrifugal pumps (2) are supplying water from an irrigation ditch to the tank while the motor is being repaired by Gilbert Pump Co. Indications are the water well pump seized in burning up the motor. Preliminary thought suggests, however, that overloads should have kicked the motor out. Speculation is that heat build up due to excessive repeated starting and stopping of motor may have deteriorated insulation prior to seizing, resulting in the burn out. Tom Hardwick will report details.

Gilbert Pump Co. will pull the 600 gpm pump and install the overhauled 300 gpm pump.

Forms needed to be submitted for drilling the second water well are being sent to us by the Arizona Land Department. A drilling rig is expected to be available around April 18.

Pipeline:

Oilwell Supply has advised that two of the three carloads of our 6" pipe for the propane pipeline have been rolled, coated, and loaded on rail cars for shipment. The third carload is expected to be ready for shipment next week. Preparations to receive and temporarily store the pipe are being made.

Miscellaneous:

A meeting with Cal Gas and Ameron was held in Phoenix on April 8. General approval of the process control and instrumentation was given by Cal Gas. Details of the meeting are in my trip report of April 11.

CH/bc

cc: K. Allen, A. Medley, C. Hayes, K. Cove11, G. Alleman

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APR 12 1974

O & G COMM. COMM.

W B

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

April 5, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 13
3-30-74 through 4-5-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(bbls)

1,013

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(bbls) (bbls)

7,092

96,594

REMARKS:

The water supply well rate of production continues to fluctuate from 280 to 300 plus gpm. The pump will be pulled Monday, April 8, to determine whether (1) the pump suction tail pipe has been plugged with clay and sand, (2) the column pipe is partially plugged, (3) the pump parts are worn from sand abrasion, (4) the water level has dropped below that depth necessary for most efficient pump performance or (5) by inference if there is possible plugging of 12-inch slotted casing. A rental centrifugal pump will be used to obtain tailing water from a nearby irrigation ditch for continued leaching operations during the time interval necessary to pull and inspect the water supply well pump.

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APR 10 1974

O & G CONS. COMM.

Mr. Glenn Sorensen
April 5, 1974
Page Two

The need to drill a second water supply well is believed necessary to supplement and protect our present source. Goodyear Farms was contacted concerning our possible use of an abandoned water well located immediately north of the Cal Gas site. The reaction to our request has been negative. Local water well drilling contractors are being contacted with regard to rig availability and estimated cost.

On Saturday, March 30, a rig was moved on location to raise the 7-inch casing to 2300 feet. This was done to provide more surface leaching area in the cavern, thus permitting the brine to reach saturation more quickly. The 4 1/2-inch wash string was pulled, examined and run back in the well. Salinity has increased from 87 to 93 percent subsequent to this action and should reach 98 percent within 9 to 10 days.

Sincerely,


C. L. Hayes
Operations Supervisor

CLH/sd

cc - Mr. W. E. Allen✓
Oil & Gas Conservation Commission
4515 North 7th Avenue
Phoenix, Arizona 85013

Mr. E. B. Alleman

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

March 29, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 12
3-23-74 through 3-29-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(bbls)

949

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(bbls) (bbls)

6,646

89,502

REMARKS:

Our water supply well continues to be troublesome. Present output is 303 gpm from a pump rated at 600 gpm. We have exhausted most of the remedies available to us in attempting to obtain the needed rate of production from this well.

Goodyear Farms, who owns a nearby water supply well not now in use, have been contacted concerning our desire to test this well for use as part of our own raw water supply system. Should a supplemental water supply from this source not be available, it appears that we must exercise the option to drill another well. Water well drilling contractors are being contacted and asked to submit bids and information on rig availability.

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O & G CONS. COMM.

Mr. Glenn Sorensen
March 29, 1974
Page Two

Salinity of S.W. No. 1 brine has not risen as rapidly as anticipated. A rig has been secured and will be on location today to inspect the 4 1/2-inch casing and raise the 7-inch from 2702 feet to approximately 2300 feet. This procedure will expose a larger salt surface area to the leaching action of injected raw water.

Preliminary evaluation of the results of logging Southwest Salt Company's No. 2 brine well suggests that the well is not suitable for hydrocarbon storage. A final decision will be made upon firsthand review of the log, which has not arrived from the site as yet.

Sincerely,


C. L. Hayes
Operations Supervisor

CLH/sd

cc - Mr. W. E. Allen ✓
Oil & Gas Conservation Commission
4515 North 7th Avenue
Phoenix, Arizona 85013

Mr. E. B. Alleman

W A

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

March 22, 1974

PHONE (918) 835-9471
TWX NO. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 11
3-16-74 through 3-22-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(bbls)

1,077

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(bbls) (bbls)

7,539

82,856

REMARKS:

An interface log is being run today in Solution Well No. 1, to check and position the depth of the propane blanket/brine interface. Southwest Salt Company's Brine Well No. 2 will also be logged at this time.

The second wash pump has been set on its foundation. Piping is essentially complete except for the final tie in, scheduled (along with electrical hook-up) for today during logging activity.

The 600 gpm pump output has declined steadily from an initial 585 gpm to 345 gpm this morning. The well continues to make

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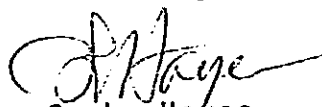
MAR 22 1974

O & G CONS. COMM.

Mr. Glenn Sorensen
March 22, 1974
Page Two

considerable amounts of sand, especially following pump shut down and start-up. Checks are being made on the water table depth to determine if pump output has dropped because of declining suction head. Careful monitoring of pumping and static fluid levels reflected by the system installed in the well for this purpose indicate that a dropping water level in the well may be part of the water well problem.

Sincerely,



C. L. Hayes
Operations Supervisor

CLH/sd

cc - Mr. W. E. Allen ✓
Oil & Gas Conservation Commission
4515 North 7th Avenue
Phoenix, Arizona 85013

Mr. E. B. Alleman

FENIX & SCISSON, INC.

5605 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

March 15, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 10
3-9-74 through 3-15-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(bbls)

356

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(bbls) (bbls)

2,489

75,317

REMARKS:

The 600 gpm raw water supply well pump and screen were installed in the water well this week. Leaching operations during this period were restricted, due to the combined failure of the 300 gpm pump then in use, and lack of sufficient make-up water. We have been able to obtain make-up water in the past from a nearby irrigation ditch carrying tailings of crop irrigation activity. This source was not available in sufficient quantity because of increased crop watering operations on nearby farms.

Shortly after beginning pumping operations with the larger 600 gpm pump, the protective screen which shrouded the pump plugged with shale, clay and sand particles. While setting the pump, the one-half inch air line (used to monitor fluid level) was dropped to the bottom of the well. The pump was pulled, screen

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MAR 20 1974

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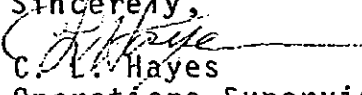
Mr. Glenn Sorensen
March 15, 1974
Page Two

removed, air line "fished" from the hole and the pump subsequently re-run into the hole the evening of March 14. During the pump-seating operation the well service crew again dropped the one-half inch air line into the hole. A one-quarter inch line was then run as a replacement and the pump put into operation.

Water reached the surface in 45 seconds, with a measured rate of 585 gpm. The produced water was heavily loaded with sand at first, but has cleaned up this morning, March 15. Present measured rate is 600 gpm of clear water. The well was pumped from 4:30 p.m. March 14 until 7:15 a.m. March 15, with a draw down during this interval of 16 feet. Static fluid level in the well is 341 feet, the pumping level being 357 feet.

Thursday evening the electrical switch controlling the manual-automatic water well pump motor control failed, in turn causing a fuse to blow which controls the raw water injection pump. An electrician is on site this morning to change out the switch, inspect the electrical system and replace the blown fuse. Leaching operations should commence this afternoon.

The second wash pump and fittings are expected on site March 16.

Sincerely,

C. L. Hayes
Operations Supervisor

CLH/sd

cc - Mr. W. E. Allen ✓
Oil & Gas Conservation Commission
4515 North 7th Avenue
Phoenix, Arizona 85013

Mr. E. B. Alleman

107

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

March 8, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 9
3-2-74 through 3-8-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)
--

771

VOLUME SPACE LEACHED WEEKLY (bbls)	CUMULATIVE (bbls)
---	----------------------

5,396

72,828

REMARKS:

The 600 gpm water supply pump with protective screen shroud has arrived and is being installed this date March 8, 1974. The pump and leaching system should be operational this evening or Saturday morning.

A total of 72,828 barrels of cavern space has been developed to date. Salinity of the brine is rising as expected and has reached 85 percent since the modified leaching technique was initiated. During the interval March 6 and 7, leaching rates were reduced because of a water supply shortage.

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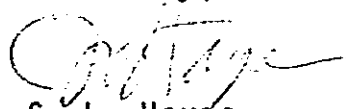
MAR 11 1974

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Mr. Glenn Sorensen
March 8, 1974
Page Two

The second wash pump is ready for shipment, valves and other fittings having been assembled. These equipment items are scheduled to be shipped March 11, 1974.

Sincerely,


C. L. Hayes
Operations Supervisor

CLH/sd

cc - Mr. W. E. Allen ✓
Oil & Gas Conservation Commission
4515 North 7th Avenue
Phoenix, Arizona 85013

Mr. E. B. Alleman

FENIX & SCISSON, INC.

8805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

March 1, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 8
2-23-74 through 3-1-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)
--

1,098

VOLUME SPACE LEACHED WEEKLY (bbls)	CUMULATIVE (bbls)
---	----------------------

7,684

67,432

REMARKS:

Leaching operations are proceeding satisfactorily, daily average volume of space leached for the past week being about 1,100 barrels per day, for a total weekly volume of 7,684 barrels.

The propane blanket material was reinjected into the 9 5/8" x 7" annulus to approximately 1,800 feet and reverse circulation washing begun February 23, 1974. Brine salinity has risen from 77 percent to 82 percent since reverse circulation began.

Our fresh water supply is still being supplemented with water obtained from Southwest Salt Company's operations. The 600 gpm

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MAR 1 1974
O & G CONS. COMM.

Mr. Glenn Sorensen
March 1, 1974
Page Two

water supply well pump has not arrived as scheduled, but is
expected sometime within the next week.

Sincerely,



C. L. Hayes
Operations Supervisor

CLH/sd

cc - Mr. W. E. Allen ✓
Oil & Gas Conservation Commission
4515 North 7th Avenue
Phoenix, Arizona 85013

WHA

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

February 22, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 7
2-16-74 through 2-22-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(bbls)

669

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(bbls) (bbls)

4,684

59,748

REMARKS:

At 10:00 a.m. February 19, 1974, fresh water injection into Solution Well No. 1 was stopped and brine circulation commenced in preparation for conversion to the modified leaching technique to be used in leaching the main cavern. The calculated sump volume is 59,748 barrels.

The propane blanket material was withdrawn from the solution well into a waiting transport trailer on February 20, and the 4 1/2-inch wash casing was raised from 3200 to 2789 feet on February 21.

The propane blanket was subsequently repositioned in the cavern and leaching operations commenced the morning of February 22.

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FEB 23 1974

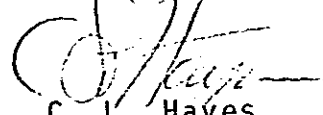
O & G CONS. COMM.

Mr. Glenn Sorensen
February 22, 1974
Page Two

A larger (10.9-inch) sheave has been installed on the fresh water injection pump, and we are presently injecting fresh water at a metered rate of 265 gallons per minute.

The fresh water supply obtained from our water well is still being supplemented with water obtained from Mr. Grott's operation. The larger water supply well pump (600 gpm) is expected to be on location by February 24. However, this pump will be protected by a screen shroud which must be fabricated. The screen shroud will not be delivered to the project site until approximately March 1. Until such time as pump and protective screen shroud are delivered, we will continue to supplement the fresh water well production as discussed above.

Sincerely,


C. L. Hayes
Operations Supervisor

CLH/sd

cc - Mr. W. E. Allen ✓
Oil & Gas Conservation Commission
4515 North 7th Avenue
Phoenix, Arizona 85013

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

February 15, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 6
2-9-74 through 2-15-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(BBLs)

1,034

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(BBLs) (BBLs)

7,240

55,064

REMARKS:

Indications are that our fresh water supply well pump has begun to fail again. We have sufficient sump volume created to permit proceeding with our program to leach the main storage cavity, should the fresh water pump fail.

A rig is scheduled tentatively for February 20, to permit us to raise the 4 1/2-inch casing, and begin our procedure to re-position the propane blanket necessary to start the modified leaching technique we will use to wash the main cavern.

The fresh water supply pump continues to be troublesome. Although we won't know definitely until the pump is pulled during the above described operations, it is believed that sand abrasion has damaged impellers and perhaps other parts.

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FEB 16 1974

O & G CORP. COMM.

Mr. Glenn Sorensen
February 15, 1974
Page Two

This pump is due to be replaced at plant shut down next week with a larger one whose capacity is 600 gpm. This pump will have special chrome parts and will be shrouded by screening designed to keep out most of the sand which is causing pump working parts to wear.

Sincerely,


C. L. Hayes
Operations Supervisor

CLH/sd

cc - Mr. W. E. Allen ✓
Oil & Gas Conservation Commission
4515 North 7th Avenue
Phoenix, Arizona 85013

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

February 8, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 5
2-2-74 through 2-8-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(bbls)

1,150

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(bbls) (bbls)

8,048

47,824

REMARKS:

All operations are routine. It was decided to leach 62,500 gross barrels of space for the sump before proceeding with the modified leaching technique to be used in washing the storage cavity. Completion of the sump is now estimated to be February 12, 1974.

Delivery of the second wash pump on site is anticipated about February 20. Forms are presently being constructed for the second pump foundation, and the cement will be poured tomorrow.

Arrangements have been made for a transport trailer to hold the blanket

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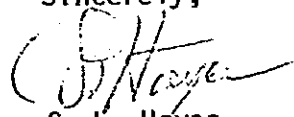
FEB - 13/74

O & G CONS. COMM.

Mr. Glenn Sorensen
February 8, 1974
Page Two

propane presently in the cavern, during the transition from sump to main cavern washing.

Sincerely,


C. L. Hayes
Operations Supervisor

CLH/sd

cc - Mr. W. E. Allen ✓
Oil & Gas Conservation Commission
4515 North 7th Avenue
Phoenix, Arizona 85013

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FEB 11 1974

O & G CON. COMM.

W#

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

February 1, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 4
1-26-74 through 2-1-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbls)	VOLUME SPACE LEACHED	
	WEEKLY (bbls)	CUMULATIVE (bbls)
1,172	8,207	39,776

REMARKS:

Washing operations are routine, the sump being presently 79.5% complete with 39,776 barrels of space leached. With no downtime the sump should be completed by February 10, 1974, at present leaching rates.

At sump completion approximately 7,000 gallons of the 10,400 gallons of propane now in the cavern will be withdrawn into a tank truck. A logging device will then be used to position the propane blanket material at its new level after the 4 1/2-inch casing has been raised to 2,800 feet from the present depth of 3,200 feet. Contractors are being secured to raise the casing and perform the propane-brine interface logging.

Sincerely,

C. L. Hayes
C. L. Hayes
Operations Supervisor

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FEB 04 1974
O & G CONS. COMM.

CLH/sd

cc - Mr. W. E. Allen ✓
Oil & Gas Conservation Commission
4515 North 7th Avenue
Phoenix, Arizona 85013

WH

FENIX & SCISSON, INC.
5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15809
TULSA, OKLAHOMA 74115

January 25, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Dear Mr. Sorensen:

Following is the weekly summary of operations at Glendale:

OPERATIONS REPORT NO. 3
1-19-74 through 1-25-74

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE
VOLUME
SPACE LEACHED
(bbls)

1024

VOLUME
SPACE LEACHED
WEEKLY CUMULATIVE
(bbls) (bbls)

7170

31,569

REMARKS:

The 50,000 barrel sump is approximately 58% complete. The new water well pump is producing at the rate of 385 gpm. Guards have been constructed around the propane pumps, raw water meter and propane suction line. Operations are routine.

Sincerely,

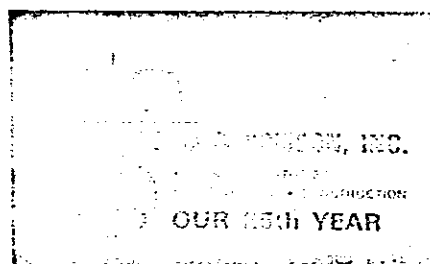
C. L. Hayes
C. L. Hayes
Operations Supervisor

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O & G CONS. COMM.

CLH/sd

cc - Mr. W. E. Allen
Oil & Gas Conservation Commission
4515 North 7th Avenue
Phoenix, Arizona 85013



FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

January 18, 1974

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn W. Sorensen
California Liquid Gas Corp.
P.O. Box 28397
Sacramento, Calif. 95828

Dear Mr. Sorensen:

Following is a summary of leaching operations at the California Liquid Gas Corporation's subsurface storage project near Glendale, Arizona.

OPERATIONS REPORT NO. 1
(1-12-74 through 1-18-74)

CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbts)	VOLUME SPACE LEACHED	
	WEEKLY (bbts)	CUMULATIVE (bbts)
358	2,508	20,893

REMARKS:

On January 14 the fresh water well volume fell below that rate necessary to maintain operations. The pump was pulled and found to be damaged beyond repair. A second pump (reconditioned) was run back into the well the late afternoon of January 17 and started pumping. The well produced considerable sand initially and was produced into the irrigation ditch during the night. This morning, January 18, the pumped water was clear and the cavern leaching operations are continuing.

Sincerely,

C. L. Hayes
C. L. Hayes
Operations Supervisor

CLH/To

cc - Mr. W. E. Allen
Oil & Gas Conservation Commission
4515 North 7th Avenue
Phoenix, Arizona 85013

547 617

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JAN 24 1974

O & G CONS. COMM.

WIT
PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

January 16, 1974

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. Glenn W. Sorensen
California Liquid Gas Corp.
P. O. Box 28397
Sacramento, Calif. 95828

Dear Mr. Sorensen:

Following is a summary of leaching operations at the California Liquid Gas Corporation's subsurface storage project near Glendale, Arizona. This report to you will continue on a weekly basis hereafter.

OPERATIONS REPORT NO. 1
(12-20-73 through 1-11-74)


CALIFORNIA LIQUID GAS CORPORATION
SOLUTION MINING PROJECT
GLENDALE, ARIZONA

DAILY AVERAGE VOLUME SPACE LEACHED (bbts)	VOLUME SPACE LEACHED	
	WEEKLY (bbts)	CUMULATIVE (bbts)
908	6,359	20,893

REMARKS:

This report covers the interval from actuation of the project through January 11, 1974. All subsequent reports will be for the seven day interval Saturday through the following Friday.

Sincerely,


C. L. Hayes
Operations Supervisor

CLH/yc

cc - Mr. W. E. Allen ✓
Oil & Gas Conservation Commission
4515 North 7th Avenue
Phoenix, Arizona 85013

RECEIVED

JAN 21 1974

O & G CONS. COMM.

517
617

W H

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. BOX 15609
TULSA, OKLAHOMA 74115

October 19, 1973

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Oil and Gas Conservation Commission
State of Arizona
4515 North 7th Avenue
Phoenix, Arizona 85013

Gentlemen:

The following is the final progress report on the salt solution well we are drilling for California Liquid Gas Corporation in Maricopa County, Arizona.

The well reached total depth of 3200' on October 18, 1973, in salt. After running density log 7" OD, 20#, K-55, seamless casing was run and set at 2702' ground level. The casing was hung at the surface uncemented. Four and one-half inch OD, 9.5#, K-55 casing was then run and set at 3194' ground level. This casing was also hung at the surface uncemented.

Two additional cores were cut in the salt before reaching the total depth. One core was taken from 2291' to 2310' and the other from 3064' to 3082'.

No other additional services were performed on the well before reaching total depth. As soon as the finished copies of the electric logs have been received, they will be forwarded to you with the completion report.

Very truly yours,



H. H. Holloway

HHH:wi

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OCT 20 1973

O & G CONS. COMM.

WR
PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

FENIX & SCISSON, INC.
5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

October 12, 1973

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Oil and Gas Conservation Commission
State of Arizona
4515 North 7th Avenue
Phoenix, Arizona 85013

Gentlemen:

The following is a progress report of the salt solution well we are drilling for California Liquid Gas Corporation in Maricopa County, Arizona.

As of 6:00 this morning the well had reached a total depth of 1863' with an 8-3/4" hole in salt.

After reaching a total depth of 1600', a 3 dimensional log was run and a caliper survey was made for cement calculations.

On October 9, 1973, 9-5/8" OD, 36#, K-55, ST&C seamless casing was run in the well and set at a depth of 1580' ground level measurement. The casing was cemented with 1685 cu. ft. of salt saturated expanding cement and the cement circulated to the surface. The cement was allowed to set for 48 hours before the plug was drilled and tested.

Very truly yours,

H. H. Holloway
H. H. Holloway

HHH:wi

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OCT 15 1973

O & G CONS. COMM.

WA

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

October 10, 1973

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. John Bannister
Oil & Gas Conservation
Commission
4515 North Seventh Ave.
Phoenix, Arizona 85013

Dear John:

We cemented 9 5/8", 36#/ft, K-55, ST&C casing at 1580' in our Luke Storage Well yesterday. The entire annulus was successfully filled with cement. Prior to running casing, a Birdwell 3-D log and caliper survey were run, pinpointing the salt top at 1010'.

Copies of the logs will be forwarded to you following receipt of final copies from Birdwell. While we are happy to provide any and all pertinent information to your commission, we ask on behalf of our client that this information be withheld from the public as long as permissible under your rules and regulations.

Yours truly,

Alfred H. Medley

Alfred H. Medley

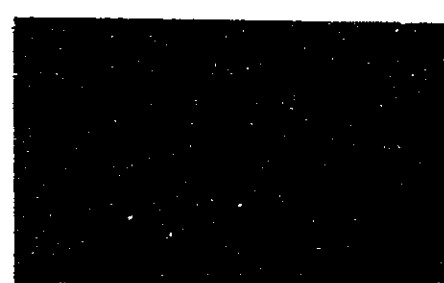
AHM/yc

cc - Mr. G. W. Sorensen
Mr. Jerry Grott
Mr. E. B. Alleman

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OCT 15 1973

O & G CONVS. COMM.



WR

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

October 5, 1973

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Oil and Gas Conservation Commission
State of Arizona
4515 North 7th Avenue
Phoenix, Arizona 85013

Gentlemen:

The following is a progress report of the salt solution well we are currently drilling for California Liquid Gas Corporation in Maricopa County, Arizona, in the Luke Area.

The well was spudded on September 27, 1973, at 1:30 p.m. After reaching a depth of 32' ground level, 14" conductor casing was set and cemented to the surface.

A 12-1/4" hole was drilled out of the conductor and had reached a total depth of 1205' as of 7:00 a.m. this morning.

Formations down to 1054' consisted of predominately surface sand and clay. Formations from 1054' to 1070' were mostly anhydrite and shale. The top of the salt was contacted at approximately 1070' and the well is still drilling in salt.

Very truly yours,

H. H. Holloway
H. H. Holloway

HHH:wi

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OCT 6 1973

O & G CONS. COMM.

APPLICATION FOR PERMIT TO DRILL OR RE-ENTER

APPLICATION TO DRILL ☒

RE-ENTER OLD WELL ☐

California Liquid Gas Corporation
NAME OF COMPANY OR OPERATOR

P. U. Box 28397 Sacramento California
Address City State

J. O. Barnes Drilling Service, Inc.
Drilling Contractor
711 East Laurel Drive, Casa Grande, Arizona
Address

DESCRIPTION OF WELL AND LEASE

Federal, State or Indian Lease Number, or if fee lease, name of lessor John L. Roach & Arthur E. Baker	Well number Storage Well No. 1	Elevation (ground) 1087'
Nearest distance from proposed location to property or lease line: 200 feet	Distance from proposed location to nearest drilling, completed or applied—for well on the same lease: N/A feet	
Number of acres in lease: 120	Number of wells on lease, including this well, completed in or drilling to this reservoir: One	
If lease, purchased with one or more wells drilled, from whom purchased: N/A	Name	Address
Well location (give footage from section lines) 1110.61' FWL & 2440.0' FNL	Section—township—range or block and survey Sec. 2, T-2N, R-1W, G&SRB&M	Dedication (Comply with Rule 105) N/A
Field and reservoir (if wildcat, so state) LP-Gas storage	County Maricopa	
Distance, in miles, and direction from nearest town or post office 7 miles west of Glendale		
Proposed depth: 3200'	Rotary or cable tools Rotary	Approx. date work will start September 15, 1973
Bond Status attached	Organization Report On file	Filing Fee of \$25.00 Attached X
Bond Amount \$5,000	Or attached X	

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AUG 29 1973
O & G CONS. COMM.

CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the Project Manager of the Fenix & Scisson, Inc. (company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.

H. H. Holloway
Signature H. H. Holloway

August 27, 1973

Date

Fenix & Scisson, Inc., is Agent for California Liquid Gas Corporation

Permit Number: 9-7-73
Approval Date: 9-7-73
Approved By: *W. E. Allen*

Notice: Before sending in this form be sure that you have given all information requested. Much unnecessary correspondence will thus be avoided.

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION
Application to Drill or Re-enter
File Two Copies

Form No. 3

(Complete Reverse Side)

1. Operator shall outline the dedicated acreage for both oil and gas wells on the plat.
2. A registered professional engineer or land surveyor registered in the State of Arizona or approved by the Commission shall show on the plat the location of the well and certify this information in the space provided.
3. All distances shown on the plat must be from the outer boundaries of the Section.
4. Is the Operator the only owner in the dedicated acreage outlined on the plat below? YES _____ NO _____ N/A
5. If the answer to question four is "no," have the interests of all the owners been consolidated by communitization agreement or otherwise? YES _____ NO _____ If answer is "yes," Type of Consolidation N/A
6. If the answer to question four is "no," list all the owners and their respective interests below: N/A

Owner	Land Description

CERTIFICATION

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

Name _____

Position _____

Company _____

Date _____

I hereby certify that the well location shown on the plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed _____

Registered Professional Engineer and/or Land Surveyor _____

Certificate No. _____

PROPOSED CASING PROGRAM

Size of Casing	Weight	Grade & Type	Top	Bottom	Cementing Depths	Sacks Cement
9-5/8"	36#	K-55	0	1600'	to surface	will be deter-
7 "	20#	"	0	2800'	suspended	mined by cali-
4-1/2"	9.5#	"	0	3200'	"	per survey



PERMIT TO DRILL

This constitutes the permission and authority from the
OIL AND GAS CONSERVATION COMMISSION,
STATE OF ARIZONA,

To: CALIFORNIA LIQUID GAS CORPORATION
(OPERATOR)

to drill a well to be known as

CALIFORNIA LIQUID GAS CORPORATION STORAGE WELL NO. 1 Roach Baker
(WELL NAME)

located 1110.61' FSL - 2440.0' FNL

Section 2 Township 2N Range 1W Maricopa County, Arizona.
- NA of said

The Section, Township and Range is dedicated to this well.

Said well is to be drilled substantially as outlined in the attached Application and must be drilled in full compliance with all applicable laws, statutes, rules and regulations of the State of Arizona.

Issued this 29th day of September, 19 73.

OIL AND GAS CONSERVATION COMMISSION

By W. B. Miller

EXECUTIVE SECRETARY

PERMIT

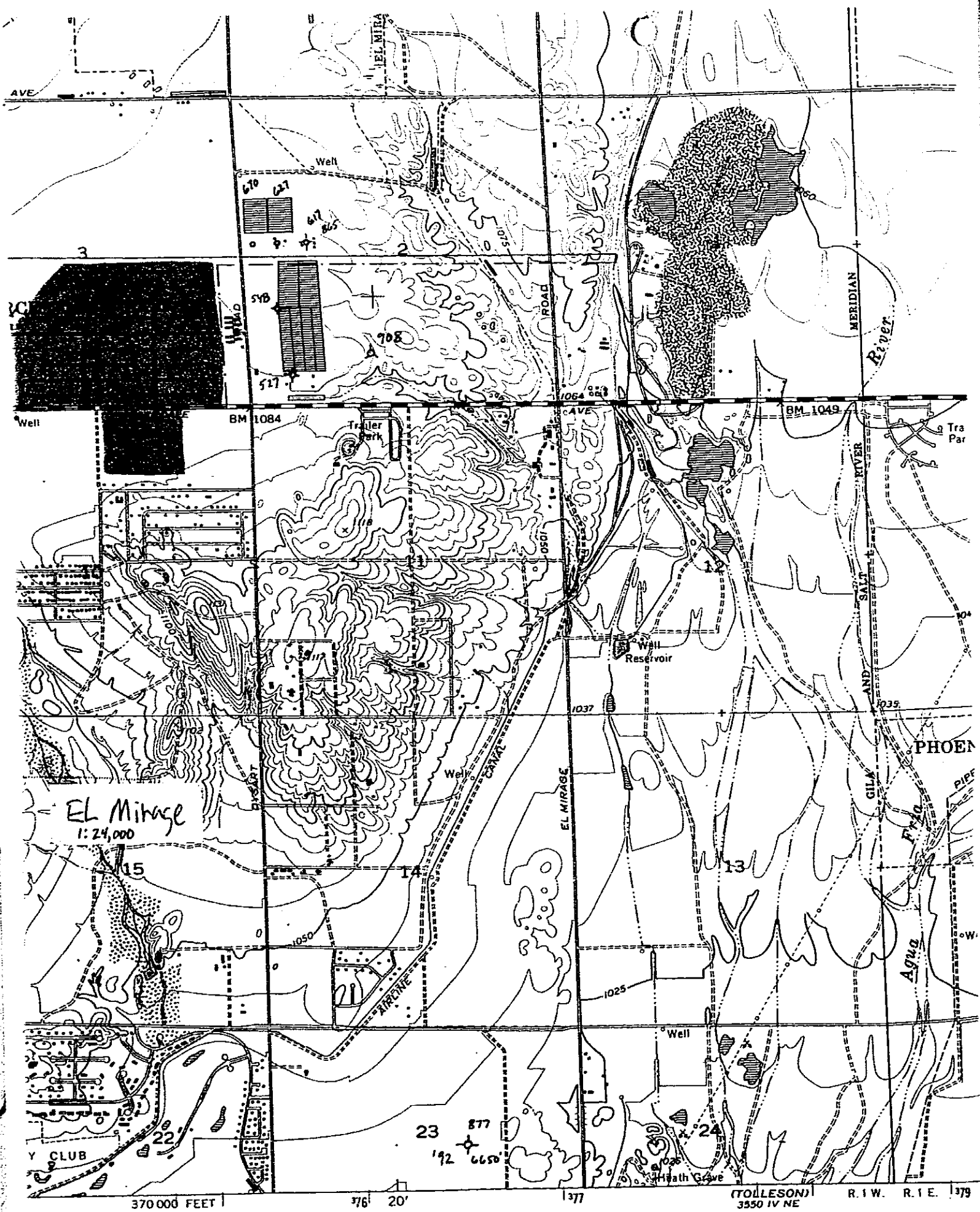
Nº 617

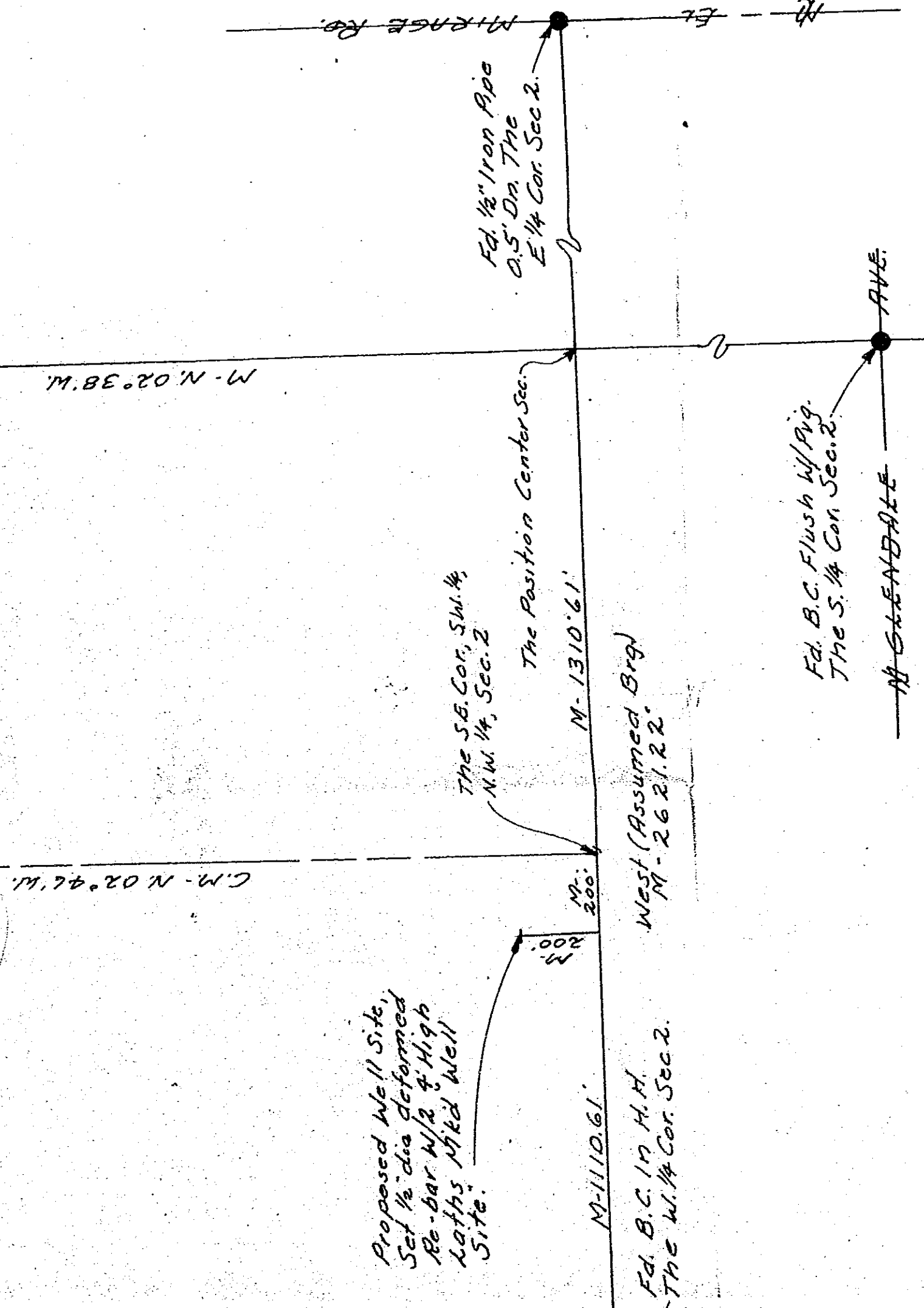
RECEIPT NO. 2530 #20
API NO. 02-013-20006

SAMPLES ARE REQUIRED

State of Arizona
Oil & Gas Conservation Commission
Permit to Drill

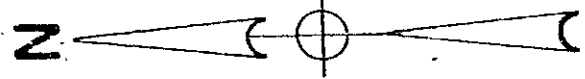
FORM NO. 27





LEGEND

- = Monument Found
- = Iron Pipe or Iron Bar Found
- = 1/2" I.D. Iron Pipe Tagged L.S. 1681 Set This Survey
- R = Data From Maricopa County Records
- CR = Calculated From R
- M = Measured in Field
- CM = Calculated From M
- = Wire or Wood Fence
- ⊖ = Chain Link Fence
- ⊖ = Block or Stone Wall
- H.H. = Hand Hole
- B.C. = Brass Cap



Scale: 1" = 300'

PART OF SURVEY

OF
 sed Well Site, The Location
 May Described As Follows:
 g At The S.E. Cor. Of The S.W. 1/4
 Sec. 2, T. 2 N., R. 1 W. G&S. R. B&M.
 West (Assumed Bearing) Along
 Mid-Sec. Line Of Sec. 2 A Distance
 of 200' Thence N. 2° 46' W. Parallel To
 ne Of The W. 1/4, N.W. 1/4, Sec. 2, A
 of 200' Feet To The Center-Line
 posed Well-Site.

CERTIFICATION: This will certify that the survey shown hereon was done under my supervision during the month of August, 1973.

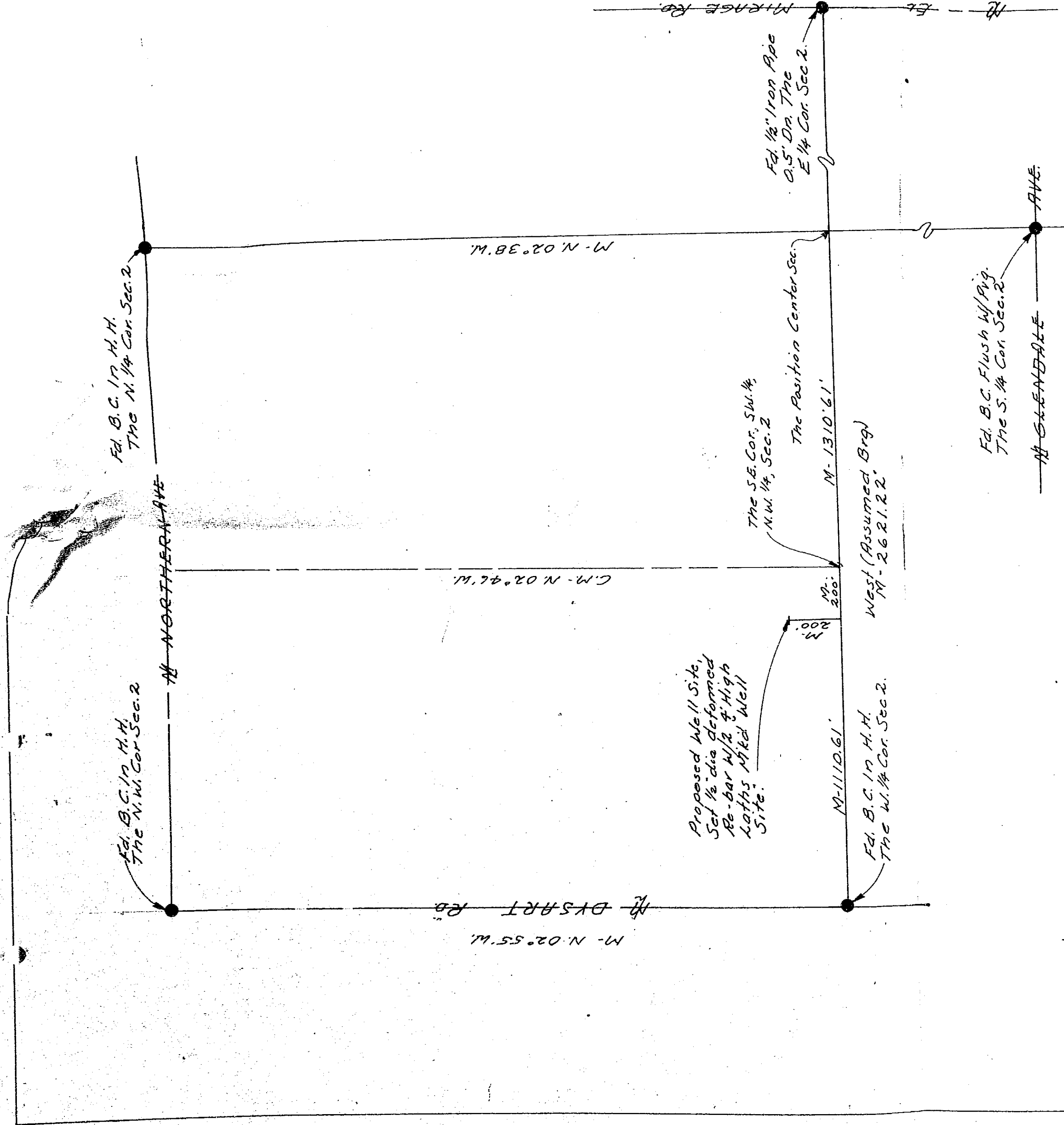
Engineer J. J. Kelly
 8/23/73

SCISSON, INC.

CONTRACTORS
 15609
 OKLA.

ARIZONA SURVEYING SERVICE
 5704 N. 27th AVENUE, PHOENIX, ARIZONA
 Drawing No. L-73-8768, Phone: 242-0539

RECEIVED
 617 AUG 28 1973
 O & G CONS. COMM.



REPORT OF SURVEY

OF

A Proposed Well Site, The Location Of Which May Described As Follows: Beginning At The S.E. Cor. Of The S.W. 1/4 N.W. 1/4 Sec. 2, T.2 N., R.1 W., G.S. R. B.E.M., Thence West (Assumed Bearing) Along The E.W. Mid-Sec. Line Of Sec. 2 A Distance Of 200 Feet. Thence N. 2° 46' W., Parallel To The E. Line Of The W. 1/2, N.W. 1/4, Sec. 2, A Distance Of 200 Feet To The Center-Line Of A Proposed Well-Site.

Scale: 1" = 300'

CERTIFICATION: This will certify that the survey done under my supervision during the month of *Nov*.

Engineer's Signature

8/2/23

LEGEND

- = Monument Found
- = Iron Pipe or Iron Bar Found
- = 1/2" I.D. Iron Pipe Tagged L.S. 1681 Set This
- R = Data From Maricopa County Records
- CR = Calculated From R
- M = Measured in Field
- CM = Calculated From M
- = Wire or Wood Fence
- = Chain Link Fence
- = Block or Stone Wall
- H.H. = Hand Hole
- B.C. = Brass Cap

617

GYROSCOPIC DIRECTIONAL SURVEY
FOR

TOP NUMBER: 252

REF ID: A66000
NAME: ROACH--BAKER #1

LOCATION: GLENDALE, AZ

SURVEY DATE: 10/20/88

SURVEY ENGINEER: G. CATES
METHOD OF CALCULATION: THE RADIUS OF CURVATURE

COMMENTS: See log file for section and plan views.

 George R. Catlin
 COMPANY REPRESENTATIVE

SCIENTIFIC DRILLING INTERNATIONAL
OKLAHOMA CITY, OKLAHOMA

JOB NUMBER: 252

DATE: 10/20/88

INRUN SURVEY

人

[illegible]

100.00	- .20	.20	0-14	S 33-45	W	.17	S	.11	W	.23
200.00	-.45	.31	0-7	S 19-56	E	.47	S	.15	W	.19
300.00	-.74	.34	0-16	S 66-46	W	.75	S	.27	W	.28
400.00	-.96	.39	0-18	N 40-0	W	.64	S	.72	W	.34
500.00	-.68	.39	0-9	S 61-0	E	.43	S	.54	W	.44
600.00	-.36	.41	0-19	N 8-46	W	.24	S	.27	W	.43
700.00	-.50	.39	0-8	S 41-18	W	.15	S	.57	W	.42
800.00	-.58	.30	0-13	N 1-55	W	.07	S	.80	W	.33
900.00	-.41	.28	0-6	N 17-0	W	.20	S	.84	W	.12
1000.00	-.29	.16	0-5	N 14-8	E	.36	N	.84	W	.05
1100.00	.35	.68	0-42	N 81-37	E	.79	N	.37	W	.67
1200.00	1.05	1.03	0-29	S 84-45	E	.82	N	.66	E	.26
1300.00	1.55	.61	0-13	N 56-20	E	.97	N	1.24	E	.34
1400.00	2.49	1.00	0-56	N 66-5	E	1.45	N	2.12	E	.72
1500.00	4.30	1.88	1-13	N 47-16	E	2.47	N	3.68	E	.45

SCIENTIFIC DRILLING INTERNATIONAL
OKLAHOMA CITY, OKLAHOMA

JOB NUMBER: 252

DATE: 10/20/88

INRUN SURVEY

人面

MEAS.	VERT.	COURSE	INC	BEARING	COORDINATES	D-LEG
				α°	λ° LATITUDE	PER 100
				β° DEPARTURE		
1	10.0	100	10	100	100	100
2	10.0	100	10	100	100	100
3	10.0	100	10	100	100	100
4	10.0	100	10	100	100	100
5	10.0	100	10	100	100	100
6	10.0	100	10	100	100	100
7	10.0	100	10	100	100	100
8	10.0	100	10	100	100	100
9	10.0	100	10	100	100	100
10	10.0	100	10	100	100	100
11	10.0	100	10	100	100	100
12	10.0	100	10	100	100	100
13	10.0	100	10	100	100	100
14	10.0	100	10	100	100	100
15	10.0	100	10	100	100	100
16	10.0	100	10	100	100	100
17	10.0	100	10	100	100	100
18	10.0	100	10	100	100	100
19	10.0	100	10	100	100	100
20	10.0	100	10	100	100	100
21	10.0	100	10	100	100	100
22	10.0	100	10	100	100	100
23	10.0	100	10	100	100	100
24	10.0	100	10	100	100	100
25	10.0	100	10	100	100	100
26	10.0	100	10	100	100	100
27	10.0	100	10	100	100	100
28	10.0	100	10	100	100	100
29	10.0	100	10	100	100	100
30	10.0	100	10	100	100	100
31	10.0	100	10	100	100	100
32	10.0	100	10	100	100	100
33	10.0	100	10	100	100	100
34	10.0	100	10	100	100	100
35	10.0	100	10	100	100	100
36	10.0	100	10	100	100	100
37	10.0	100	10	100	100	100
38	10.0	100	10	100	100	100
39	10.0	100	10	100	100	100
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44	10.0	100	10	100	100	100
45	10.0	100	10	100	100	100
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47	10.0	100	10	100	100	100
48	10.0	100	10	100	100	100
49	10.0	100	10	100	100	100
50	10.0	100	10	100	100	100
51	10.0	100	10	100	100	100
52	10.0	100	10	100	100	100
53	10.0	100	10	100	100	100
54	10.0	100	10	100	100	100
55	10.0	100	10	100	100	100
56	10.0	100	10	100	100	100
57	10.0	100	10	100		

[illegible]

THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF
1800.00 FEET EQUALS 8.29 FEET AT N 41-42 E

SCIENTIFIC DRILLING INTERNATIONAL
OKLAHOMA CITY, OKLAHOMA

JOB NUMBER: 252

DATE: 10/20/88

INRUN SURVEY

BY

THE RADIUS OF CURVATURE

MEAS. DEPTH	VERT. DEPTH	VERT. SECT.	COURSE DEV.	INC. D M	BEARING D M	COORDINATES LATITUDE DEPARTURE	D-LEG PER 100
100.00	100.00	-20	.20	0-14 S	33-45 W	.17 S .11 W	.23
200.00	200.00	-45	.31	0-7 S	19-56 E	.47 S .15 W	.19
300.00	300.00	-74	.34	0-16 S	66-46 W	.75 S .27 W	.28
400.00	400.00	-96	.49	0-18 N	40-0 W	.64 S .72 W	.34
500.00	500.00	-68	.39	0-9 S	61-0 E	.43 S .54 W	.44
600.00	600.00	-36	.41	0-19 N	8-46 W	.24 S .27 W	.43
700.00	699.99	-50	.39	0-8 S	41-18 W	.15 S .57 W	.42
800.00	799.99	-58	.30	0-13 N	1-55 W	.07 S .80 W	.33
900.00	899.99	-41	.28	0-6 N	17-0 W	.20 N .84 W	.12
1000.00	999.99	-29	.16	0-5 N	14-8 E	.36 N .84 W	.05
1100.00	1099.99	.35	.68	0-42 N	81-37 E	.79 N .37 W	.67
1200.00	1199.99	1.05	1.03	0-29 S	84-45 E	.82 N .66 E	.26
1300.00	1299.98	1.55	.61	0-13 N	56-20 E	.97 N 1.24 E	.34
1400.00	1399.98	2.49	1.00	0-56 N	66-5 E	1.45 N 2.12 E	.72
1500.00	1499.96	4.30	1.88	1-13 N	47-16 E	2.47 N 3.68 E	.45

SCIENTIFIC DRILLING INTERNATIONAL
OKLAHOMA CITY, OKLAHOMA

JOB NUMBER: 252

DATE: 10/20/88

INRUN SURVEY

BY

THE RADIUS OF CURVATURE

MEAS. DEPTH	VERT. DEPTH	VERT. SECT.	COURSE DEV.	INC. D M	BEARING D M	COORDINATES LATITUDE DEPARTURE	D-LEG PER 100
1600.00	1599.95	5.35	1.22	0-11 N	14-38 W	3.59 N 4.01 E	1.14
1700.00	1699.94	6.56	1.40	1-25 N	50-27 E	4.85 N 4.42 E	1.35
1800.00	1799.92	8.29	1.74	0-35 N	28-14 E	6.19 N 5.52 E	.90

THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF

***** 8.29 FEET AT N 41-42 E.

1800.00 FEET EQUALS *****

VERTICAL SECTION

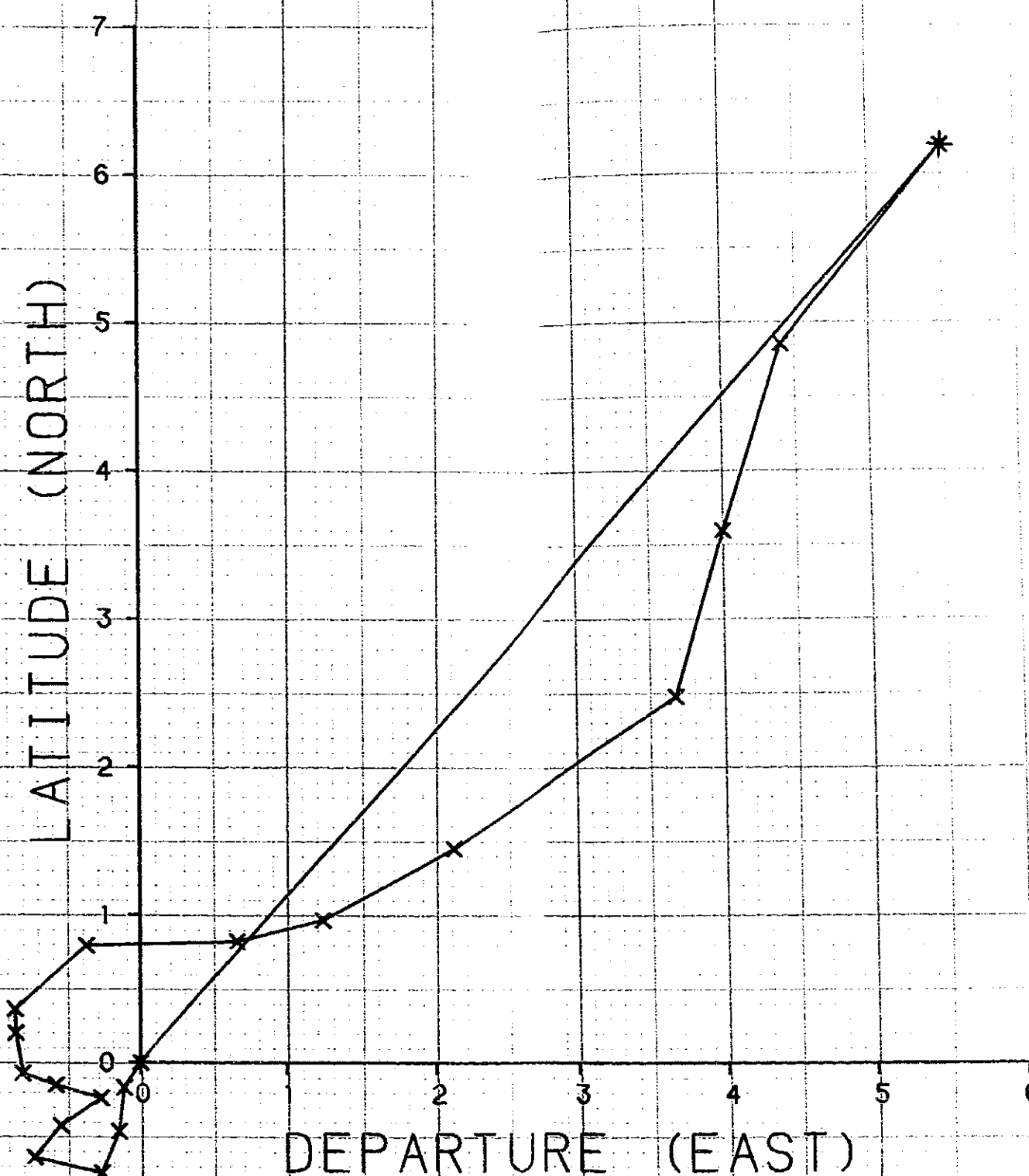
(SCALE = 100 FEET / INCH)

TRUE VERTICAL DEPTH

0 *
100 *
200 *
300 *
400 *
500 *
600 *
700 *
800 *
900 *
1000 *
1100 *
1200 *
1300 *

PLAN VIEW

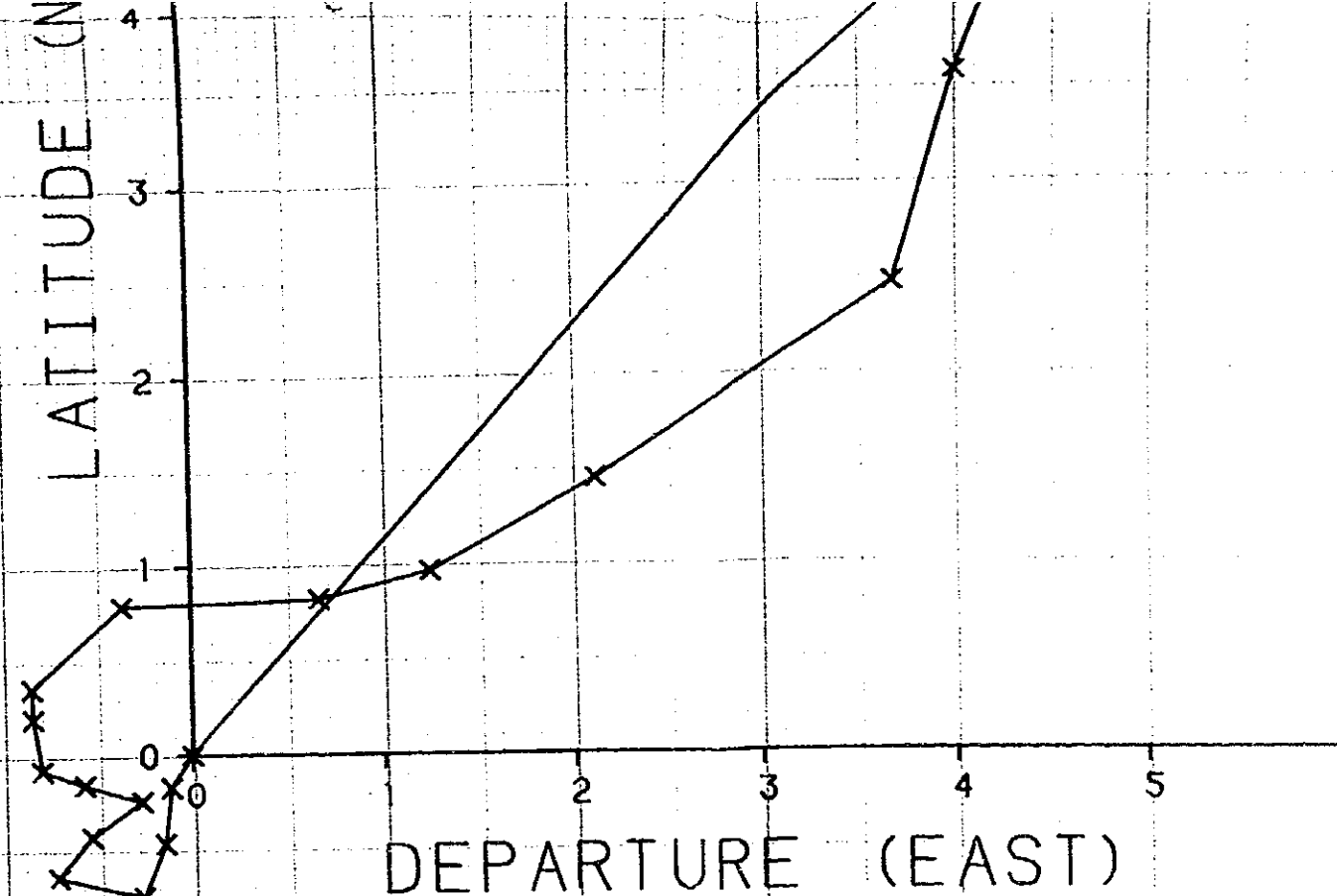
(SCALE = 1 FEET / INCH)



COMPANY	SCIENTIFIC DRILLING INTERNATIONAL
	OKLAHOMA CITY, OKLAHOMA
CUSTOMER	CAL GAS
JOB NO.	252
WELL NAME	ROACH-BAKER #1
DATE	10/20/88
LOCATION	GLENDAL, AZ
INRUN SURVEY BY RADIUS OF CURVATURE	
1800.0 FT MEASURED DEPTH	
1799.9 FT VERTICAL DEPTH	
8.3 FT DISPLACEMENT IN	

WELL NO. 2-T2N-R1W, Maricopa Co., AZ
JORD. STORAGE WELL

TRUE VERTICAL DEPTH

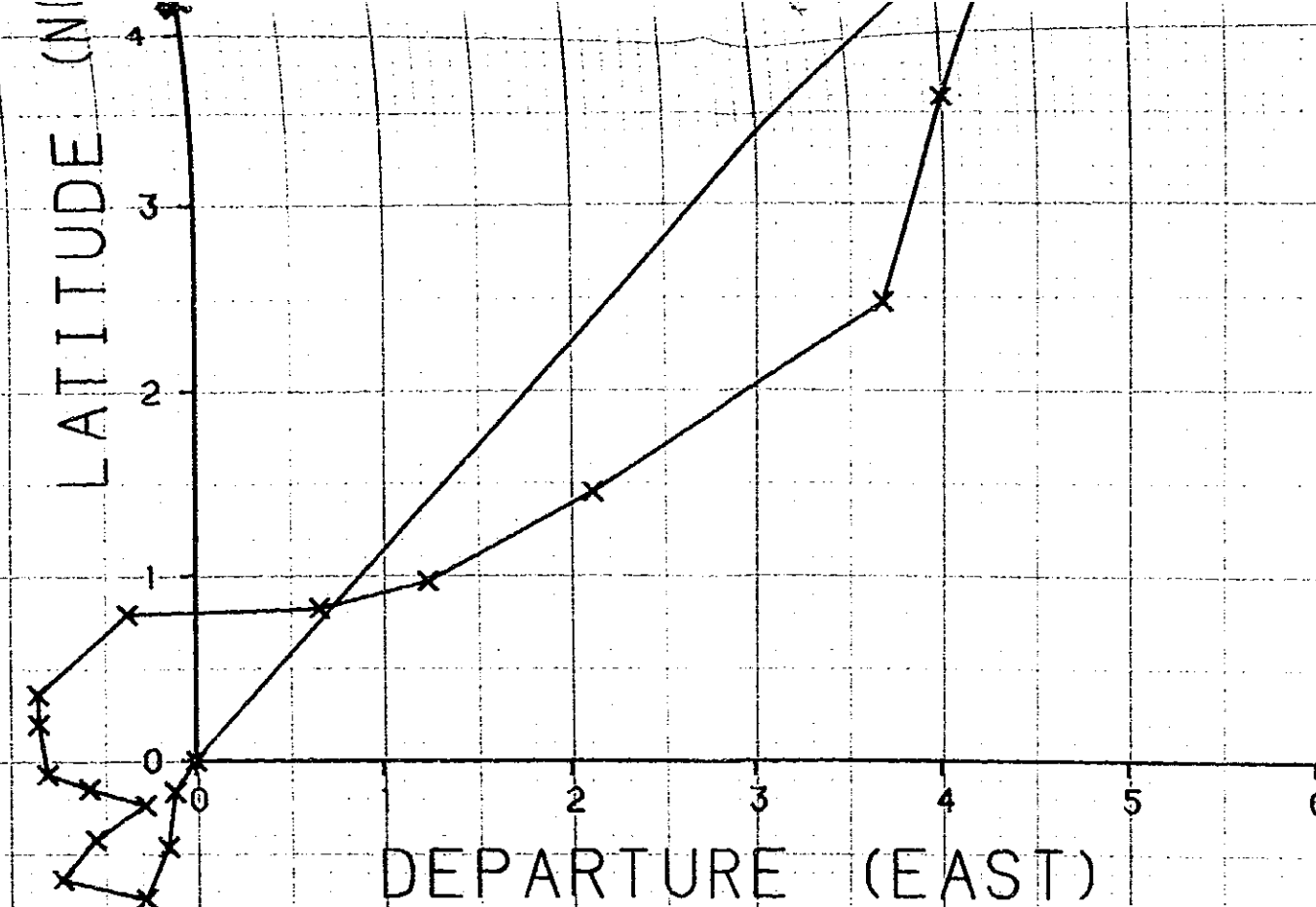


COMPANY SCIENTIFIC DRILLING INTERNATIONAL
 OKLAHOMA CITY, OKLAHOMA
 CUSTOMER CAL-GAS
 JOB NO. 252
 WELL NAME ROACH-BAKER #1
 DATE 10/20/88
 LOCATION GLENDALE, AZ

INRUN SURVEY BY RADIUS OF CURVATURE
 1800.0 FT MEASURED DEPTH
 1799.9 FT VERTICAL DEPTH
 8.3 FT DISPLACEMENT IN
 TARGET DIRECTION OF $N41^{\circ}41'E$
 8.3 FT VERT. SECTION IN
 PROPOSAL DIRECTION OF $N41^{\circ}41'E$

0 100 200 300 400 500

HORIZONTAL DISPLACEMENT



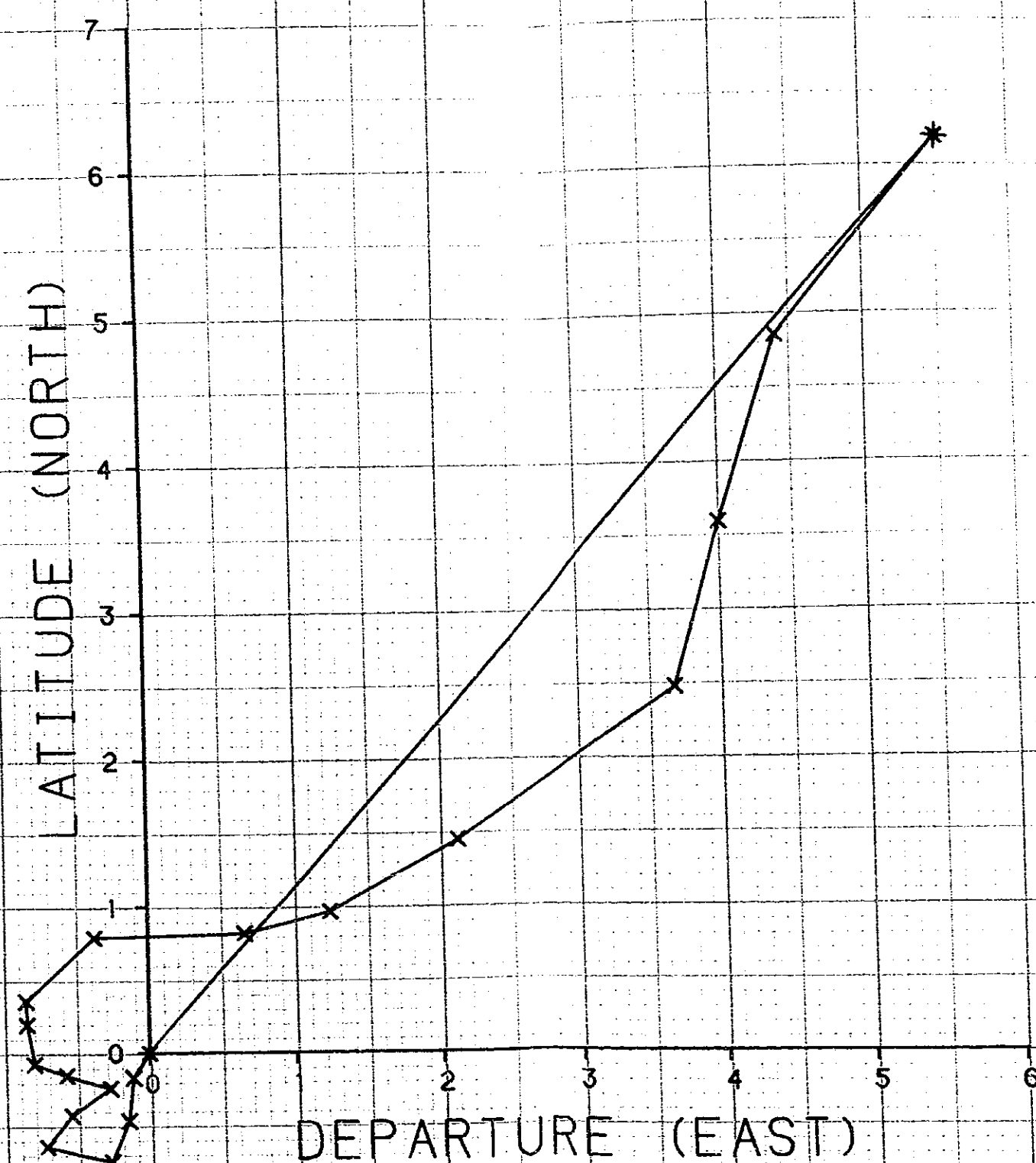
COMPANY SCIENTIFIC DRILLING INTERNATIONAL
 OKLAHOMA CITY, OKLAHOMA
 CUSTOMER CAL-GAS
 JOB NO. 252
 WELL NAME ROACH-BAKER #1
 DATE 10/20/88
 LOCATION GLENDALE, AZ
 INRUN SURVEY BY RADIUS OF CURVATURE
 1800.0 FT MEASURED DEPTH
 1799.9 FT VERTICAL DEPTH
 8.3 FT DISPLACEMENT IN
 TARGET DIRECTION OF $N41^{\circ}41'E$
 8.3 FT VERT. SECTION IN
 PROPOSAL DIRECTION OF $N41^{\circ}41'E$

HORIZONTAL DISPLACEMENT

SW/4W Sec 2-T2N-R1W,
 Maricopa Co., AZ
 JOE. STORAGE WELL

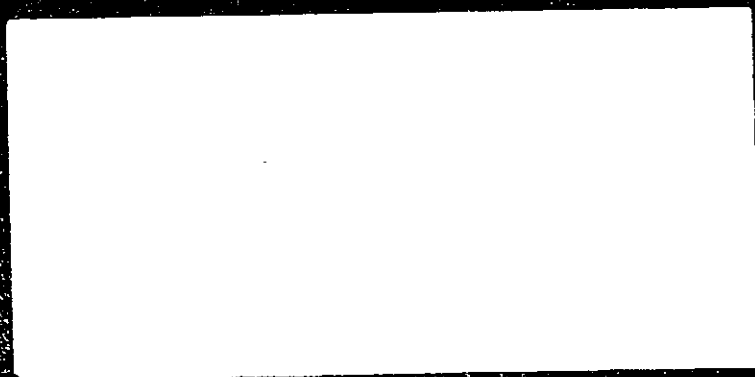
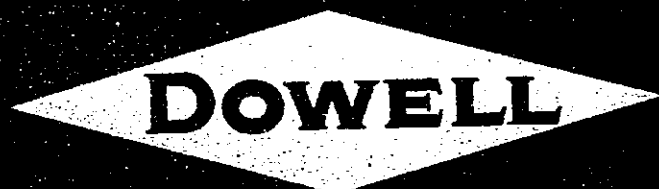
VERTICAL SECTION
(SCALE = 100 FEET / INCH)

PLAN VIEW
(SCALE = 1 FEET / INCH)



COMPANY	SCIENTIFIC DRILLING INTERNATIONAL
	OKLAHOMA CITY, OKLAHOMA
CUSTOMER	CAL-GAS
JOB NO.	252
WELL NAME	ROACH-BAKER #1
DATE	10/20/88
LOCATION	GLENDAL, AZ
INRUN SURVEY BY RADIUS OF CURVATURE	
1800.0 FT MEASURED DEPTH	

SR/HR DEC 2-T2N-R1W, Maricopa Co. JRP. STORAGE WELL



SONAR CALIPER REPORT

CONFIDENTIAL

DOWELL SONAR CALIPER SURVEY

Release Date _____

TREATMENT NO: 08-02-506

JOB NO: 761

WELL DATA

ZERO @ 9 5/8 CHF

ELEVATION @ KB = - FT
ELEVATION @ GL = - FT

T.D. DOWELL 2347 FT

OPERATOR 3000 FT

CASING SIZE 9 5/8 IN

DEPTH 1581 FT

INTERMEDIATE 7 IN

LINER - FT
DEPTH 2305 FT

TUBING 4 1/2 IN

DEPTH - FT

FENIX & SCISSIONS INC.

WELL NO: 1 SOLUTION

GLENDAL PLANT

JULY 10, 1974

Permit #617

PRODUCTION: STORAGE

GENERAL COMMENTS

7IN. PULLED TO 1517 4 1/2 IN. OUT

MAILING ADDRESS

STREET/BOX: 747

CITY: GLENDALE STATE: ARIZONA

ZIP: 85311

ATTN: MR. E.B. ALLEMAN

MR. MARION HASLETT
COMPANY REPRESENTATIVE

F. CHILDRESS
DOWELL ENGINEER

FENIX AND SCISSIONS INC.

JULY 10, 1974

WELL NO: 1 SOLUTION

JOB NO: 761

VOLUME CALCULATIONS

DEPTH	INCR CU FT	TOTAL CU FT	BBLs
1799	0	0	0
1800	102	102	18
1810	2782	2884	514
1820	3082	5966	1063
1830	3352	9318	1659
1840	4700	14018	2497
1850	5121	19140	3409
1860	4186	23325	4154
1870	4231	27556	4907
1880	4462	32018	5702
1890	5112	37129	6612
1900	5552	42681	7601
1910	5823	48504	8638
1920	6532	55036	9801
1930	7563	62598	11148

PAGE 2

VOLUME CALCULATIONS

DEPTH	INCR CU FT	TOTAL CU FT	BBLs
1940	8639	71238	14225
1950	8690	79927	15773
1960	8761	88688	17333
1970	9268	97955	18984
1980	9626	107581	20698
1990	10355	117936	22542
2000	11417	129352	24575
2010	12328	141680	26771
2020	12437	154117	28986
2030	11977	166094	31119
2040	12138	178232	33280
2050	12722	190954	35546
2060	14321	205274	38097
2070	16845	222119	41096

PAGE 3

VOLUME CALCULATIONS

DEPTH	INCR CU FT	TOTAL CU FT	BBLs
2080	17958	240077	47493
2090	18929	259005	50864
2100	19119	278123	54269
2110	17767	295890	57433
2120	17940	313829	60628
2130	18756	332585	63968
2140	19483	352067	67438
2150	32665	384731	73255
2160	43684	428415	81035
2170	41138	469553	88361
2180	46005	515558	96554
2190	53952	569510	106162
2200	57015	626524	116316
2210	55969	682493	126284

PAGE 4

VOLUME CALCULATIONS

DEPTH	INCR CU FT	TOTAL CU FT	BBLS
2220	51298	733790	144555
2230	43680	777470	152334
2240	42106	819575	159832
2250	40414	859988	167030
2260	36827	896815	173588
2270	44622	941437	181535
2280	52746	994183	190929
2290	51321	1045500	200068
2300	49992	1095490	208971
2310	44338	1139820	216868
2320	34062	1173880	222934
2330	28727	1202600	228050
2340	24442	1227040	232403
2347	8539	1235570	233923

DOWELL SONAR CALIPER SURVEY

FENIX AND SCISSIONS INC. GLENDALE PLANT
WELL NO. 1 SOLUTION

JULY 10, 1974
JOB NO. 761

DEPTH	RADII IN FT							
	N	S	E	W	NE	SW	SE	NW
1799	1.1	1.4	1.4	1.0	1.1	1.3	1.5	1.1
1800	10.1	7.7	9.1	9.6	10.1	8.6	8.1	10.2
1810	13.2	8.0	9.0	9.3	10.7	8.2	8.4	10.0
1820	11.7	8.4	9.5	10.4	11.4	9.2	8.3	11.5
1830	12.6	8.2	9.9	10.7	11.5	9.0	8.8	11.6
1840	22.4	8.7	9.8	11.5	15.4	9.2	8.7	18.2
1850	14.9	8.9	9.4	11.7	14.4	9.5	8.5	13.7
1860	14.5	8.4	10.7	11.4	14.0	9.7	8.6	13.3
1870	14.8	9.4	10.4	12.0	12.7	9.8	9.8	13.8
1880	15.6	9.1	10.9	12.3	14.5	9.6	9.7	13.7
1890	17.8	8.9	12.0	12.3	16.7	10.4	9.3	16.2
1900	17.6	9.2	12.1	12.6	16.0	9.6	9.6	16.4
1910	18.5	9.3	12.6	13.4	16.3	9.4	10.5	18.0
1920	19.8	9.7	13.9	14.6	18.2	10.0	10.3	18.2
1930	24.3	10.4	13.9	14.4	20.1	11.1	11.1	19.4

PAGE 2

DEPTH	RADII IN FT							
	N	S	E	M	NE	SW	SE	NW
1940	23.3	9.7	14.9	15.8	21.7	11.6	10.4	21.8
1950	22.4	10.2	13.7	15.2	19.8	11.7	10.7	20.6
1960	23.7	10.5	15.5	16.3	20.2	12.2	11.5	22.0
1970	24.1	10.1	15.2	16.0	21.9	12.0	11.7	21.5
1980	24.7	10.5	15.6	15.7	22.0	12.2	11.7	22.5
1990	27.2	10.8	15.5	15.8	23.9	11.9	11.8	23.9
2000	30.0	10.7	16.3	15.7	25.0	11.7	11.6	25.8
2010	30.4	11.2	16.6	16.5	25.5	12.9	11.8	25.7
2020	29.5	10.2	16.6	16.7	25.3	12.7	12.0	25.6
2030	28.8	10.9	17.2	15.2	25.3	12.4	12.8	23.1
2040	30.0	11.0	16.8	16.5	26.0	12.5	12.0	26.0
2050	30.9	10.9	16.3	17.1	26.8	12.8	11.8	26.5
2060	35.6	11.1	16.3	18.4	27.1	12.2	12.1	30.9
2070	33.9	14.5	17.7	21.5	28.2	14.9	15.0	34.5

PAGE 3

DEPTH	RADII IN FT							
	N	S	E	W	NE	SW	SE	NW
2080	35.6	13.1	18.1	21.0	29.1	14.5	14.2	33.7
2090	37.4	13.0	17.9	21.8	30.0	14.0	13.9	35.3
2100	37.4	12.7	18.5	23.2	29.4	12.8	12.0	32.7
2110	37.7	11.2	18.1	18.1	30.6	12.6	12.1	31.4
2120	38.4	10.8	18.9	22.1	31.3	12.4	11.6	32.2
2130	40.0	10.7	19.0	16.7	31.9	12.2	11.3	32.7
2140	40.6	10.8	19.3	21.0	33.7	11.7	11.5	32.6
2150	62.0	16.0	23.0	26.0	57.0	17.0	16.0	59.0
2160	60.0	15.0	29.0	25.0	50.0	17.0	16.0	45.0
2170	64.0	17.0	30.0	28.0	47.0	19.0	21.0	41.0
2180	73.0	17.0	31.0	22.0	60.0	18.0	18.0	37.0
2190	71.0	15.0	30.0	28.0	62.0	18.0	16.0	51.0
2200	72.0	15.0	28.0	29.0	62.0	17.0	18.0	53.0
2210	73.0	15.0	27.0	27.0	59.0	18.0	15.0	55.0

PAGE 4

DEPTH	RADII IN FT							
	N	S	E	W	NE	SW	SE	NW
2220	62.0	15.0	30.0	26.0	52.0	18.0	17.0	51.0
2230	54.0	15.0	26.0	29.0	53.0	18.0	19.0	42.0
2240	60.0	16.0	31.0	26.0	58.0	18.0	20.0	43.0
2250	56.0	16.0	34.0	23.0	46.0	18.0	21.0	36.0
2260	62.0	14.0	22.0	21.0	50.0	16.0	15.0	41.0
2270	79.0	14.0	28.0	23.0	62.0	15.0	17.0	43.0
2280	77.0	11.0	29.0	20.0	59.0	12.0	14.0	38.0
2290	67.0	11.0	31.0	21.0	65.0	11.0	14.0	50.0
2300	68.0	11.0	37.0	17.0	61.0	11.0	11.0	49.0
2310	60.0	10.0	26.0	14.0	64.0	10.0	10.0	36.0
2320	53.0	9.0	20.0	12.0	54.0	8.0	9.0	28.0
2330	54.0	8.0	22.0	9.0	51.0	9.0	8.0	22.0
2340	51.0	7.0	9.0	8.0	51.0	8.0	8.0	21.0
2347	50.0	6.0	7.0	7.0	9.0	7.0	7.0	8.0

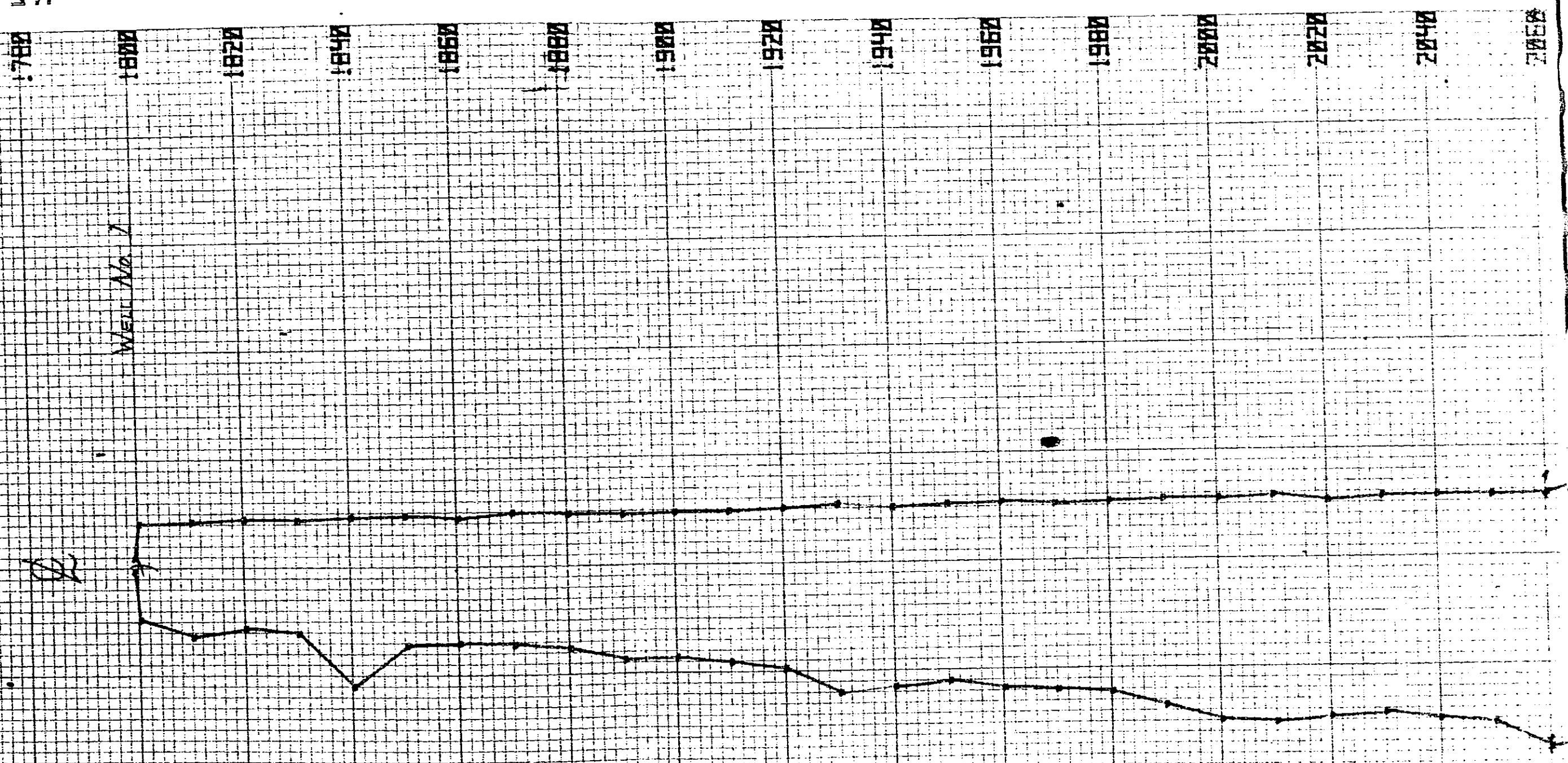
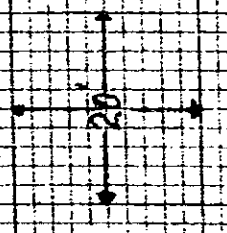
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5

N

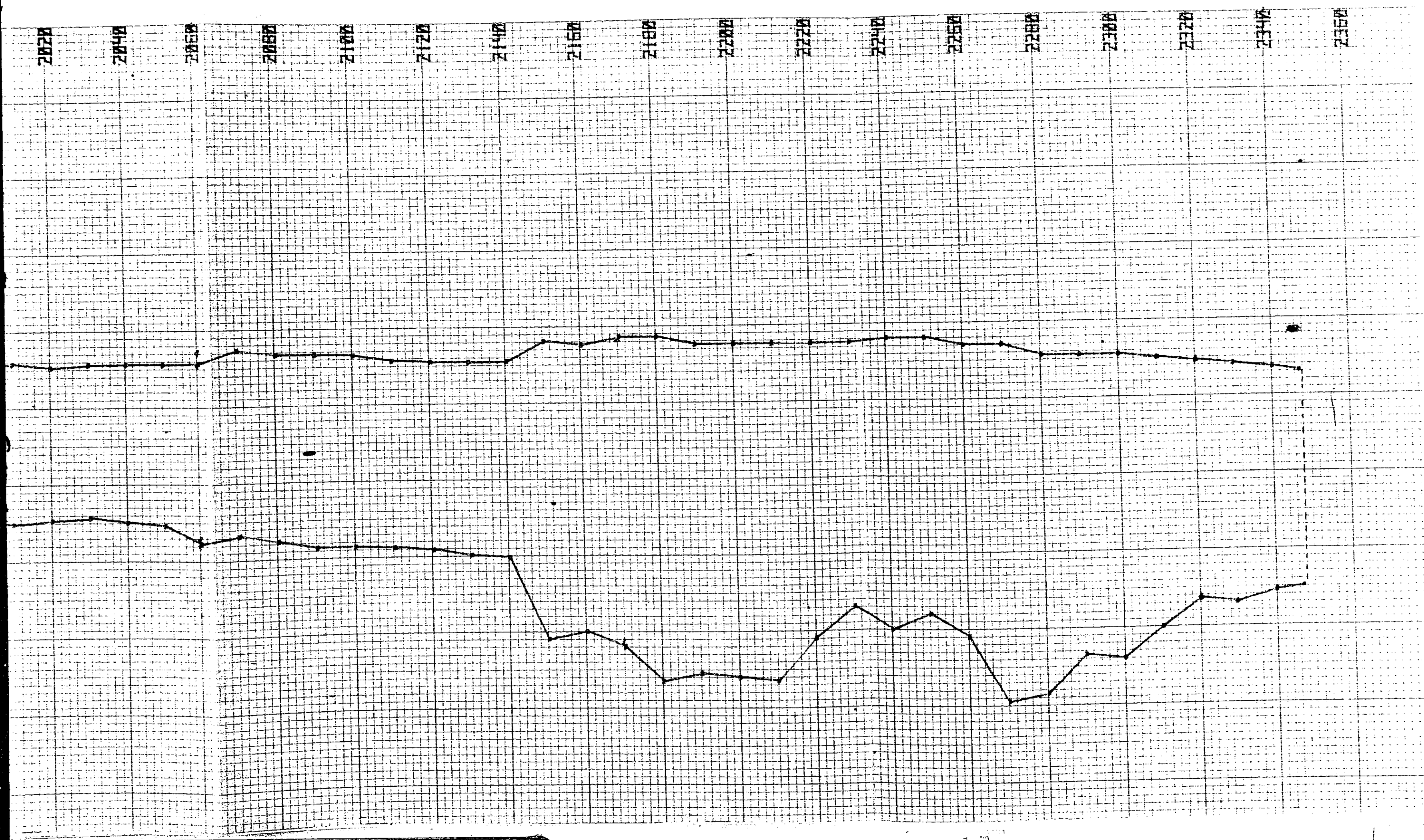
Well No. 1

Q

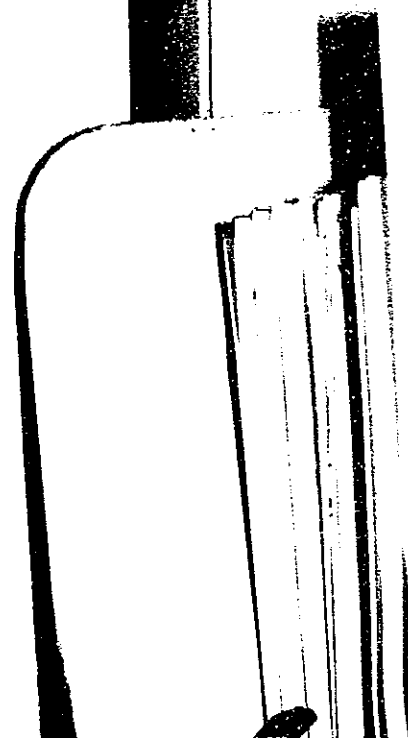


ORP. STORAGE WELL
M/VAN DUC 2-T2N-R1W, Maricopa Co.

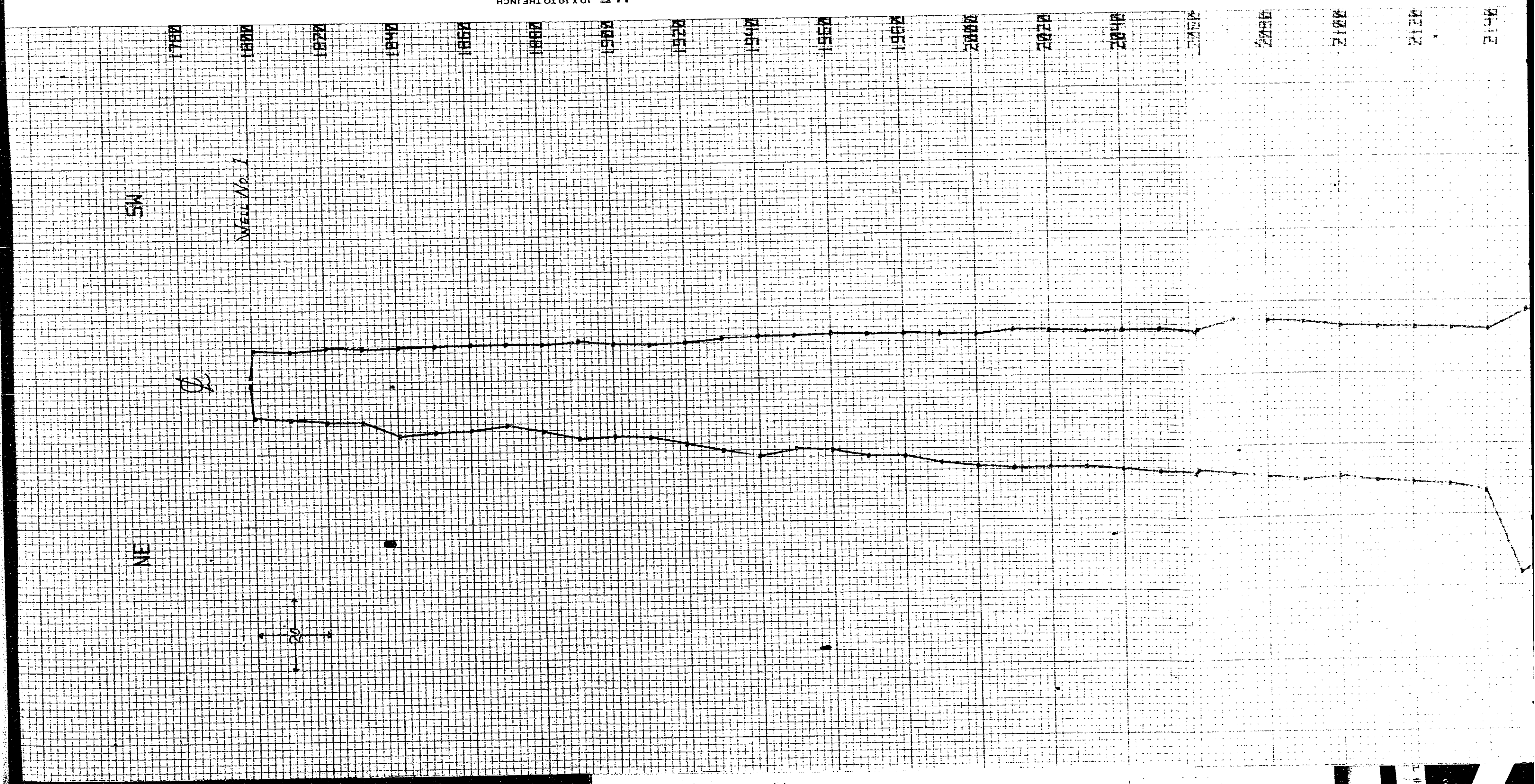
K&M
10 X 10 TO THE INCH
KEUFFEL & ESSER CO



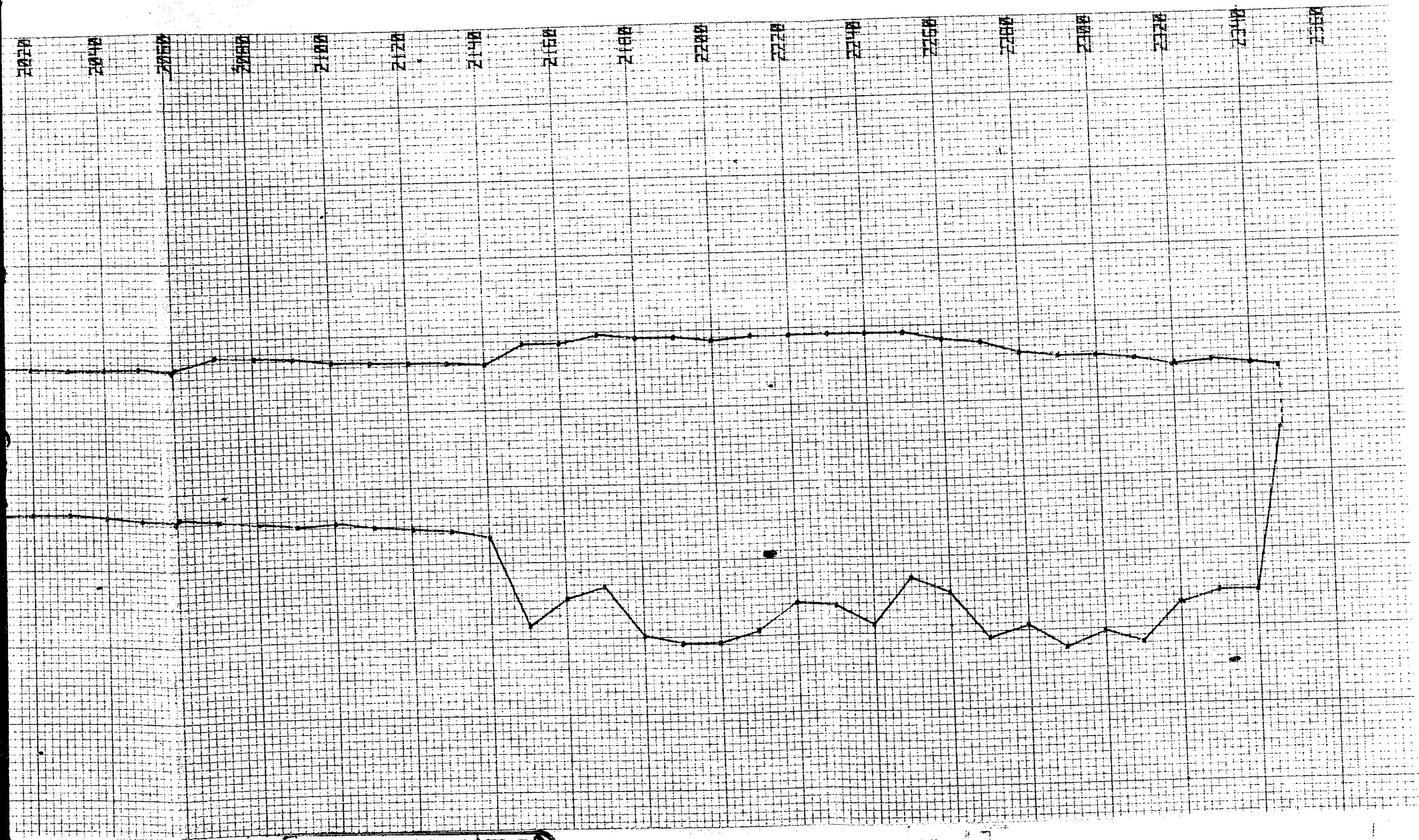
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SEC 2-T2N-R1W, Maricopa Co.



K-M
10 X 10 TO THE INCH
KEUFFEL & ESSER CO.

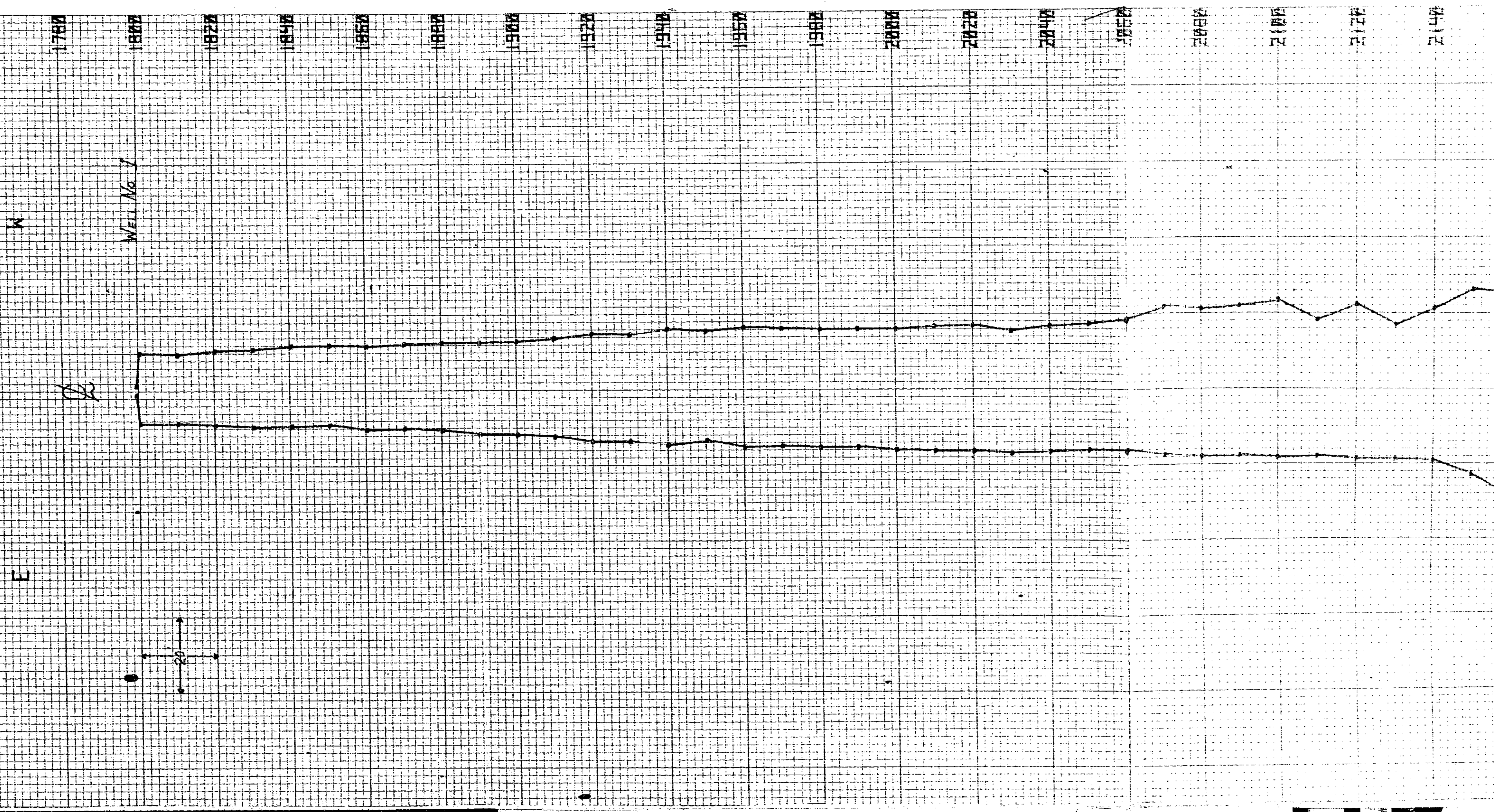


10 X 10 TO THE INCH
KEUFFEL & ESSER CO.

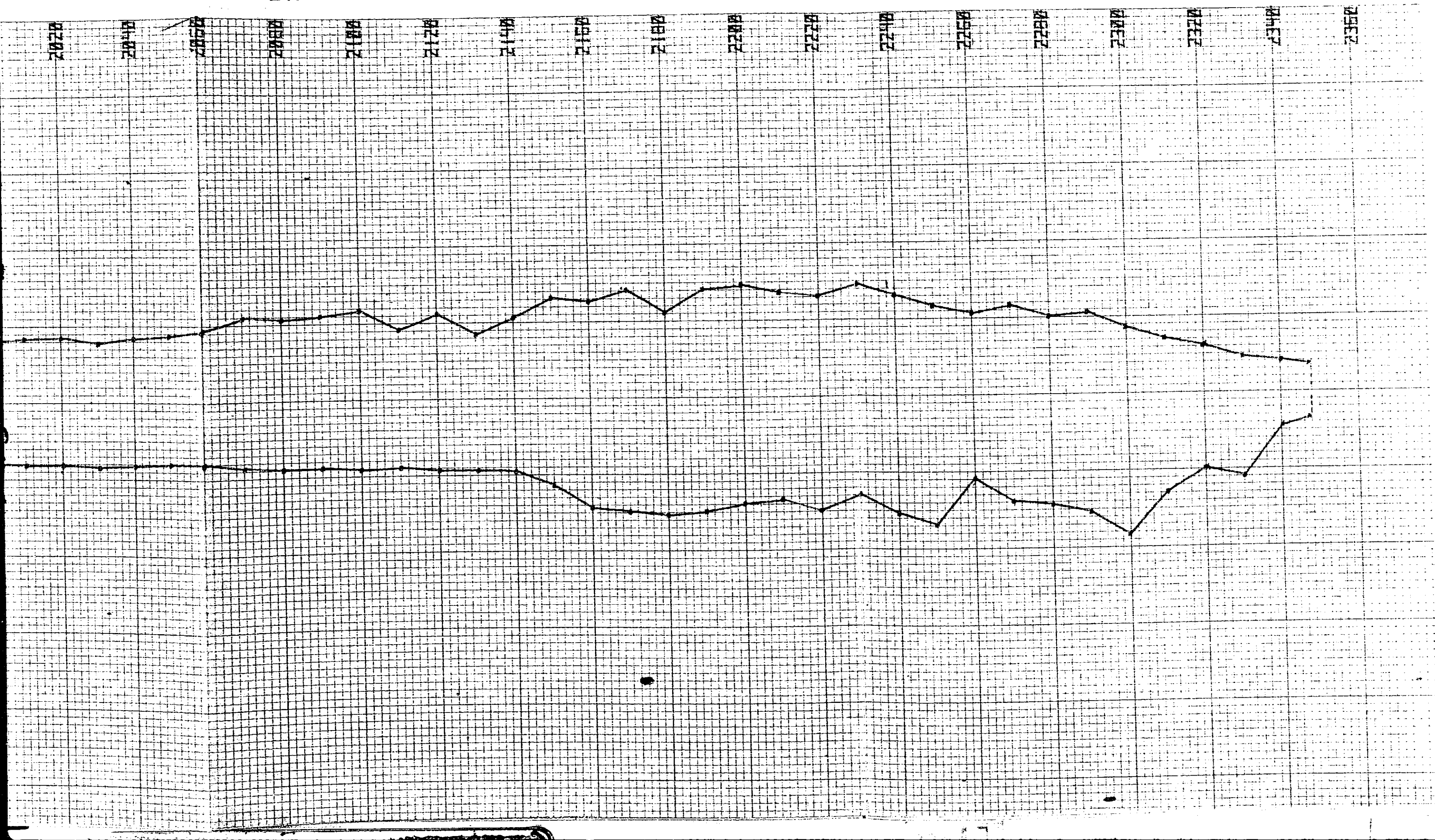


J.R. STORAGE WELL #1
W/IN SUE 2-TEN-RIV, MATICOPA CO.

K&M
10 X 10 TO THE INCH
KEUFFEL & ESSER CO



JRP. STORAGE WELL #1
W/IN SUC 2-T2N-R1W, Maricopa Co.



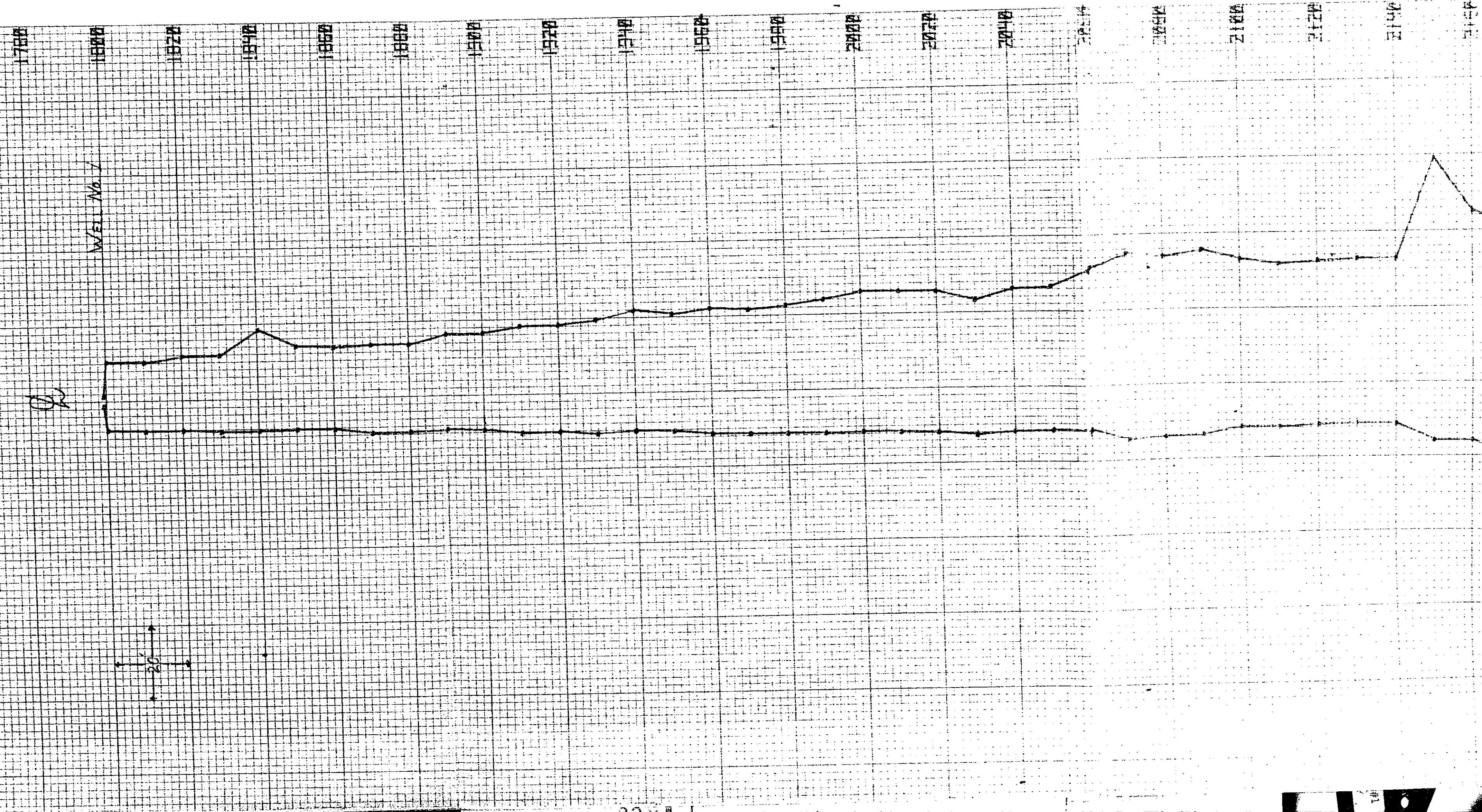
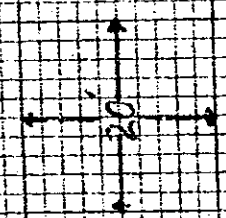
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KEUFFEL & ESSER CO.

NW

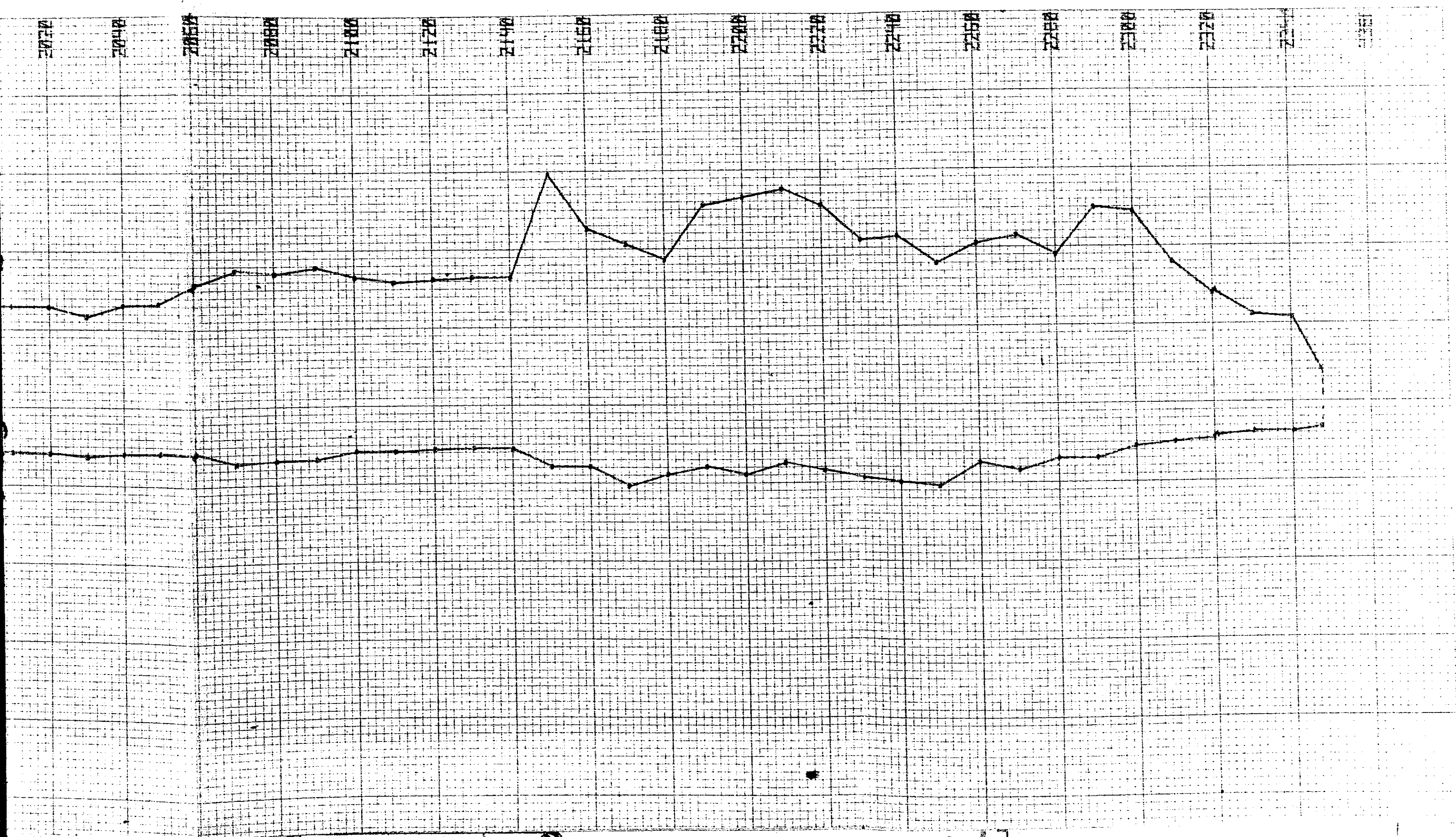
SE

Well No. 7

Q₂



JRD. STORAGE WELL #1
MAY 2-12N-RW, Matigopa Co.



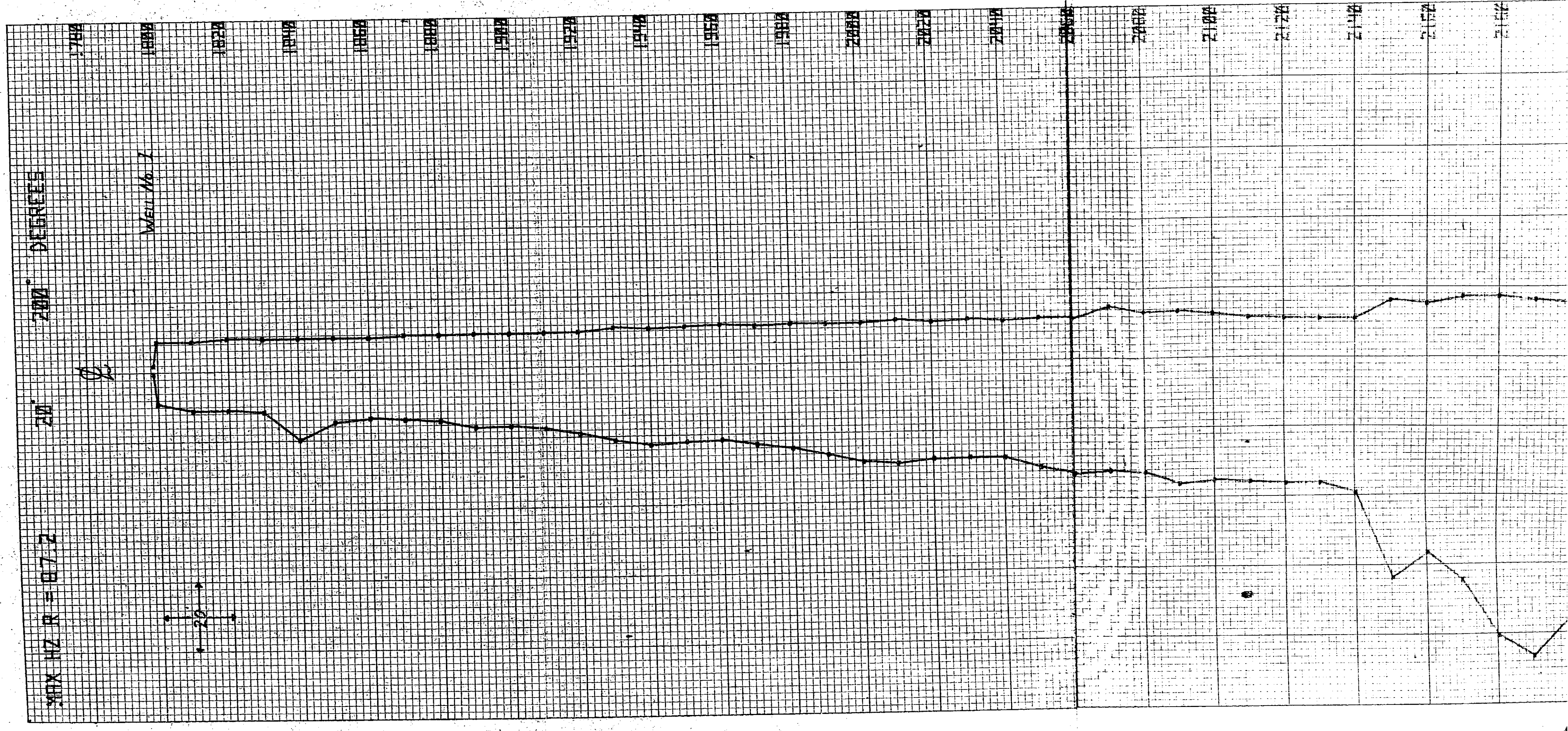
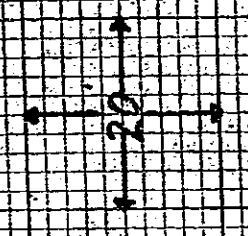
K-M
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KEUFFEL & ESSER CO.

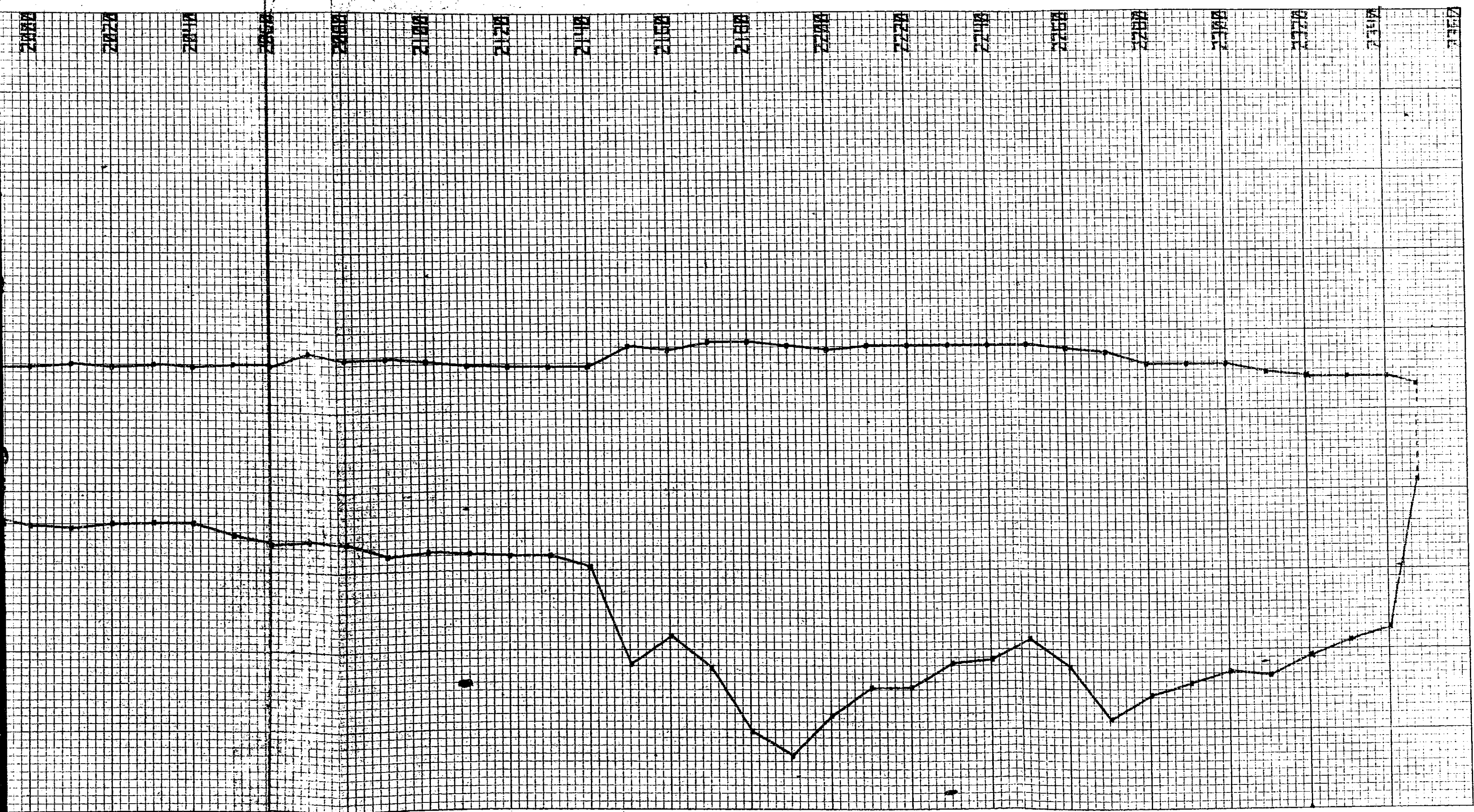
900X 14Z R = 07.2

20° 200° DEGREES

2

Well No. 1





RP. STORAGE WELL #1
2-12N-RM, Maricopa Co.

DOWELL

**SONAR CALIPER
REPORT**

DOWELL SONAR CALIPER SURVEY

TREATMENT NO: 08-02-771

JOB NO: 18

WELL DATA

ZERO @ 9 5/8 BHF

T.D. DOWELL 2500 FT

OPERATOR 2728 FT

CASING SIZE 9 5/8 IN

DEPTH 1578 FT

INTERMEDIATE 7 IN

LINER . FT

TUBING 4 1/2 IN

DEPTH OUT FT

DEPTH OUT FT

CALIF. LIQUID GAS

WELL NO: 1

CAL GAS TERMINAL

MARCH 25, 1976

647
PRODUCTION: STORAGE

GENERAL COMMENTS

UNABLE TO SURVEY BELOW 2500'
DUE TO WALL CONDITIONS

MAILING ADDRESS

STREET/BOX: 785

CITY: GLENDALE STATE: ARIZONA

ZIP: 85311

ATTN: MR. E.B. ALLEMAN

MR. E.B. ALLEMAN
COMPANY REPRESENTATIVE

A.J. MYERS
DOWELL ENGINEER

DOWELL SONAR CALIPER SURVEY

CALIF. LIQUID GAS CORP. CAL GAS TERMINAL
WELL NO: 1

MARCH 25, 1976

JOB NO: 018

VOLUME CALCULATIONS

DEPTH	INCR CU FT	TOTAL CU FT	INCR BBLs	BBLs
1767	0	0	0	0
1798	755	755	134	134
1800	285	1040	51	185
1820	6131	7171	1092	1277
1830	3495	10666	622	1899
1840	4875	15541	868	2768
1860	10519	26060	1873	4641
1880	9141	35201	1628	6269
1900	10492	45692	1868	8137
1920	12755	58447	2272	10409
1940	16332	74779	2909	13317
1960	13667	93446	3324	16642
1980	19517	112962	3476	20117
1990	11526	124488	2053	22170
2000	12498	136985	2226	24396
2020	22937	159922	4085	28481
2040	23224	183146	4136	32617
2060	31312	214458	5576	38193

PAGE 2

VOLUME CALCULATIONS

DEPTH	INCR CU FT	TOTAL CU FT	INCR BBLs	BBLs
2080	37029	251486	6594	44788
2100	37204	288690	6626	51413
2120	40532	329222	7218	58632
2130	24305	353526	4328	62960
2135	16418	369943	2924	65884
2140	19384	389326	3452	69336
2160	96978	486304	17271	86607
2180	118160	604464	21043	107650
2200	124263	728727	22130	129780
2220	134075	862802	23877	153657
2225	48281	911082	8598	162255
2230	62646	973727	11157	173412
2240	126391	1100110	22509	195921
2260	248145	1348250	44192	240113
2280	210109	1558350	37418	277531
2300	160507	1718850	28585	306116
2320	121070	1839920	21561	327677
2340	89829	1929740	15998	343675

PAGE 3

VOLUME CALCULATIONS

DEPTH	INCR CU FT	TOTAL CU FT	INCR BBLs	BBLs
2360	67472	1997210	12016	355691
2380	50621	2047830	9015	364706
2390	19750	2067580	3517	368223
2400	17601	2085180	3135	371358
2420	32705	2117880	5824	377182
2460	58257	2176130	10375	387557
2480	27602	2203730	4916	392473
2500	28178	2231900	5018	397491

DOWELL SONAR CALIPER SURVEY

CALIF. LIQUID GAS CORP. CAL GAS TERMINAL

MARCH 25, 1976

WELL NO. 1

JOB NO. 018

RADII IN FT

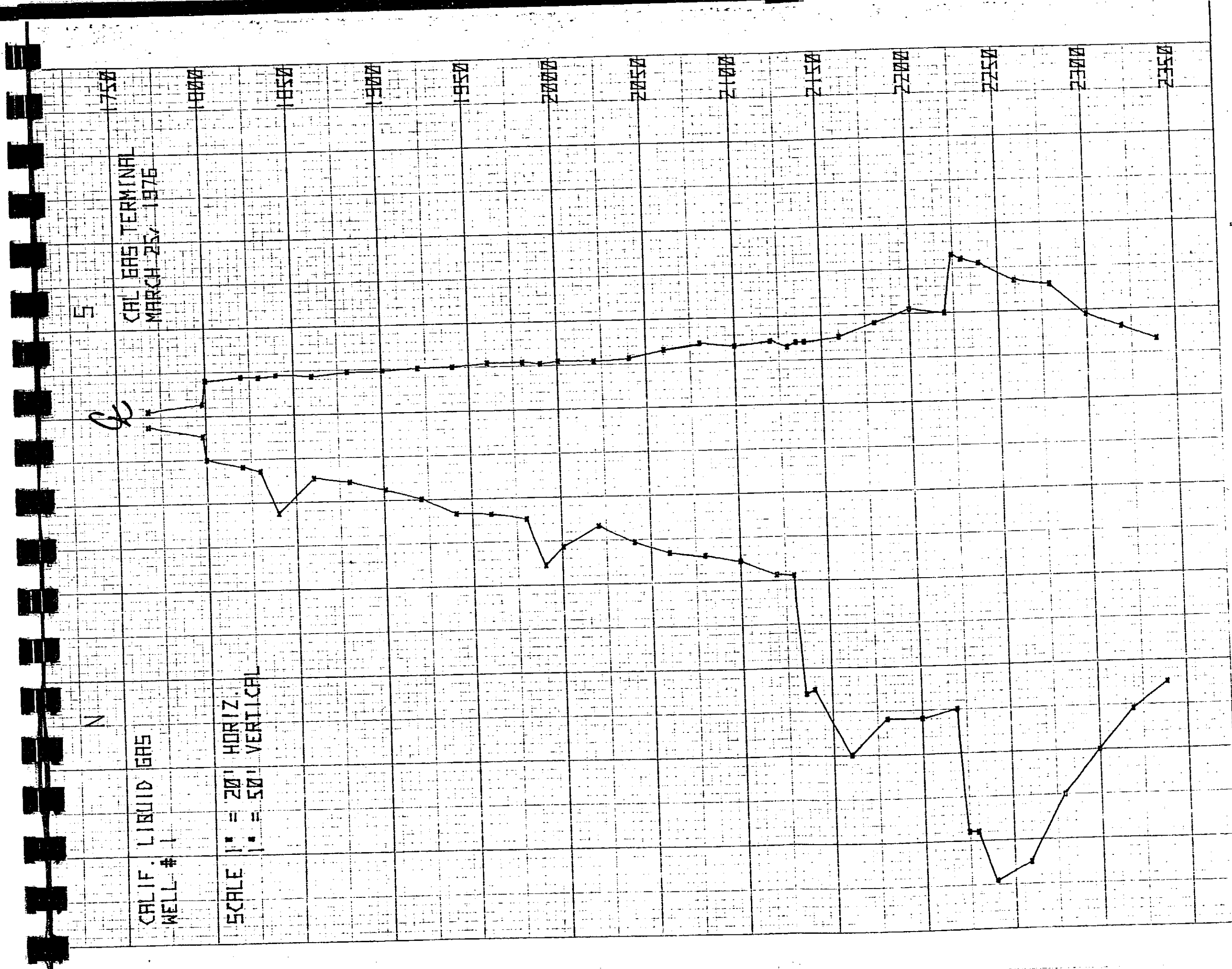
DEPTH	N	S	E	W	NE	SW	SE	NW
1767	2.5	1.1	1.4	1.5	2.1	1.3	1.1	2.2
1798	4.8	2.7	3.1	4.1	4.3	2.9	2.8	4.2
1800	10.2	7.9	9.3	9.7	10.2	8.8	8.3	10.5
1820	11.9	8.6	9.7	10.6	11.6	9.4	8.6	11.7
1830	12.9	8.4	10.0	11.1	11.7	9.3	9.1	11.8
1840	22.7	8.9	10.0	11.7	15.4	9.5	8.8	18.5
1860	14.7	8.5	10.9	11.6	14.2	10.0	8.8	13.4
1880	15.7	9.4	11.0	12.6	14.6	9.9	10.0	14.0
1900	17.8	9.5	12.3	12.9	16.0	9.8	9.8	16.7
1920	20.1	9.9	14.2	14.8	18.5	10.2	10.6	18.5
1940	23.5	10.0	15.2	16.0	21.9	11.9	10.5	22.1
1960	23.8	10.7	15.7	16.4	20.4	12.4	11.7	22.2
1980	25.0	10.7	15.7	16.0	22.0	12.7	11.8	22.7
1990	35.6	10.3	14.2	15.3	21.8	11.6	10.9	28.8
2000	31.5	10.8	14.6	17.1	24.2	12.4	11.6	25.8
2020	26.9	10.6	16.1	16.8	23.8	12.4	11.6	23.7
2040	30.8	11.1	16.8	17.5	25.5	12.5	12.4	23.9
2060	33.3	12.9	21.1	28.0	25.9	15.8	13.1	36.8

PAGE 2

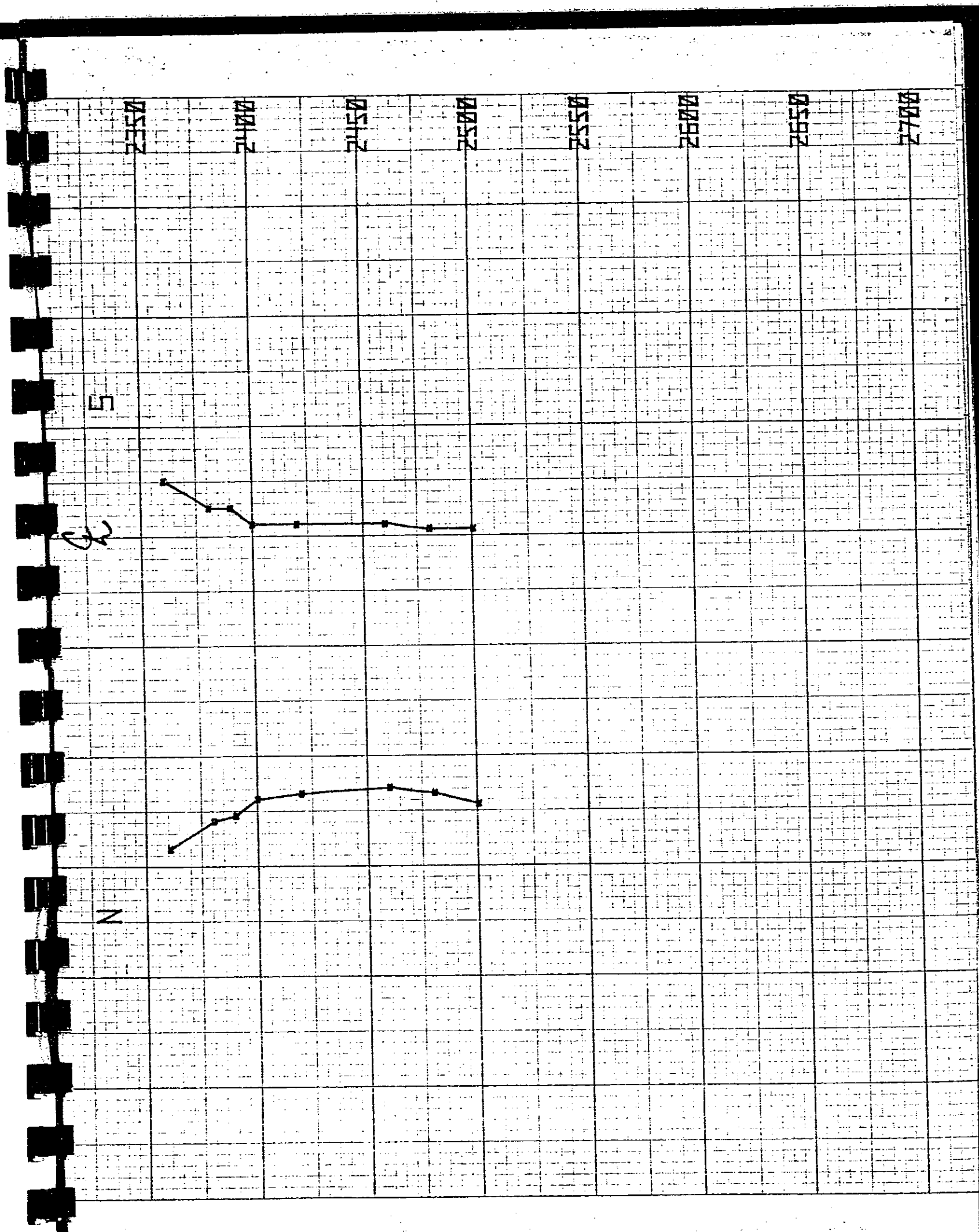
DEPTH	RADII IN FT							
	N	S	E	W	NE	SW	SE	NW
2080	34.1	14.2	19.1	25.1	28.2	15.7	14.1	30.1
2100	35.5	13.4	21.0	24.1	30.5	17.1	14.5	33.2
2120	38.0	14.4	21.1	24.2	32.1	17.2	15.1	33.1
2130	39.0	13.0	22.0	22.0	54.0	16.0	15.0	32.0
2135	66.0	14.0	23.0	23.0	49.0	16.0	16.0	34.0
2140	65.0	14.0	23.0	24.0	47.0	17.0	17.0	35.0
2160	80.0	15.0	30.0	26.0	68.0	18.0	18.0	41.0
2180	72.0	18.0	31.0	27.0	66.0	20.0	20.0	47.0
2200	72.0	21.0	46.0	30.0	62.0	24.0	26.0	47.0
2220	70.0	20.0	41.0	36.0	75.0	25.0	30.0	52.0
2225	98.0	33.0	48.0	44.0	94.0	36.0	37.0	65.0
2230	98.0	32.0	49.0	43.0	79.0	34.0	35.0	85.0
2240	109.0	31.0	46.0	46.0	85.0	33.0	35.0	81.0
2260	105.0	27.0	50.0	46.0	80.0	30.0	32.0	79.0
2280	90.0	26.0	46.0	41.0	77.0	27.0	31.0	65.0
2300	80.0	19.0	42.0	32.0	69.0	22.0	29.0	55.0
2320	71.0	16.0	36.0	21.0	64.0	15.0	22.0	39.0
2340	65.0	13.0	28.0	23.0	41.0	18.0	19.0	42.0

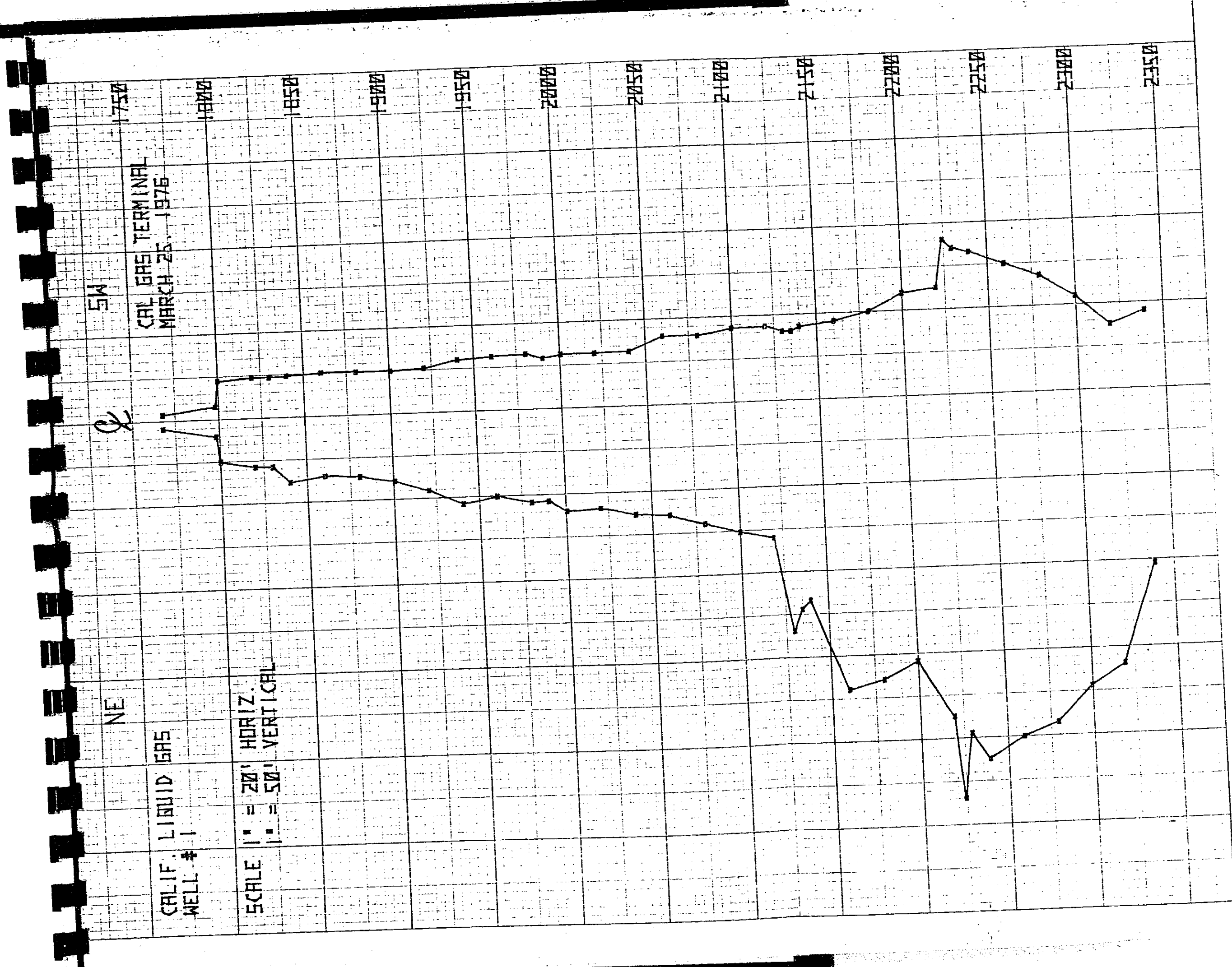
PAGE 3

DEPTH	RADII IN FT							
	N	S	E	W	NE	SW	SE	NW
2360	57.0	10.0	17.0	20.0	36.0	15.0	12.0	41.0
2380	52.0	5.0	13.0	9.0	37.0	4.0	9.0	30.0
2390	51.0	5.0	9.0	8.0	31.0	5.0	5.0	28.0
2400	48.0	2.0	6.0	5.0	37.0	2.0	2.0	23.0
2420	47.0	2.0	4.0	5.0	34.0	2.0	2.0	22.0
2460	46.0	2.0	5.0	6.0	20.0	2.0	2.0	21.0
2480	47.0	1.0	3.0	3.0	26.0	2.0	1.0	20.0
2500	49.0	1.0	2.0	5.0	20.0	2.0	1.0	25.0



SN/IN DEC 2-T2N-RM, Matlopa Co.
 JRP. STORAGE WELL #1





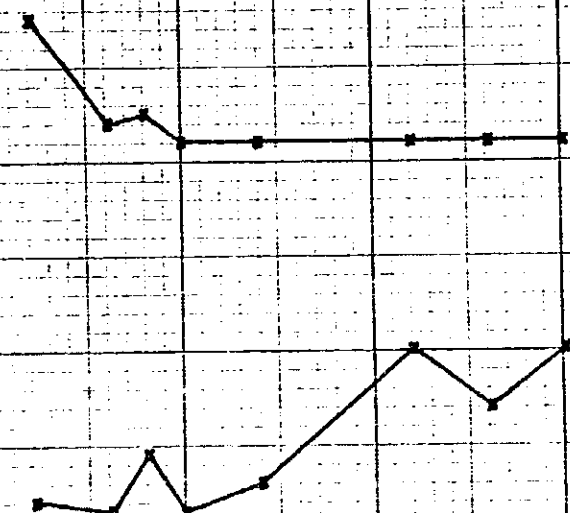
SW/NE SEC 2-T2N-R1W, Maricopa Co., AZ
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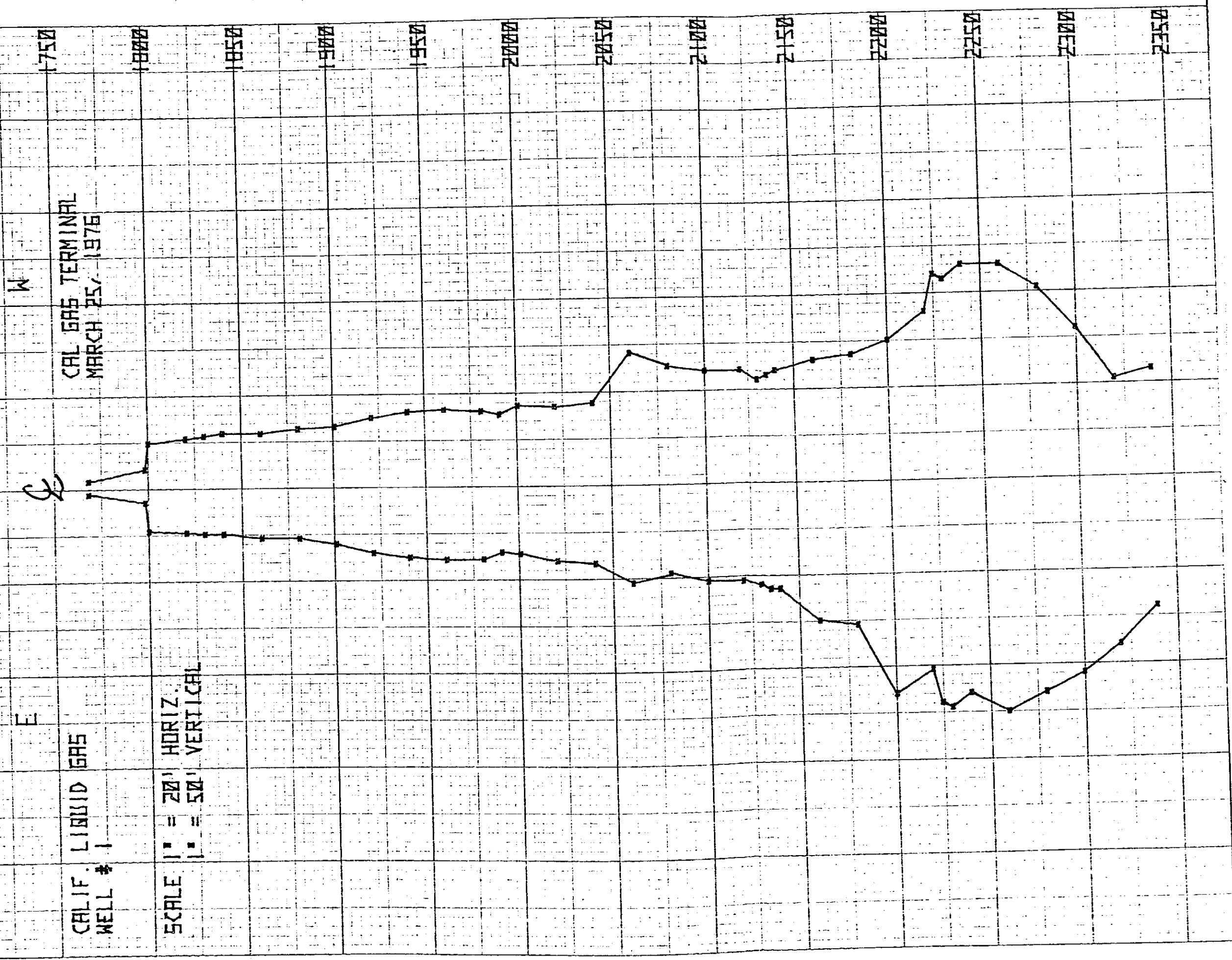
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SW

Q

NE





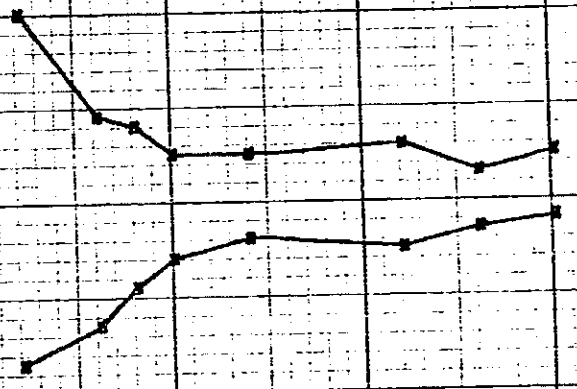
SR/WR Sec 2-T2N-R1W, Maricopa Co., AZ
JRF. STORAGE WELL #1

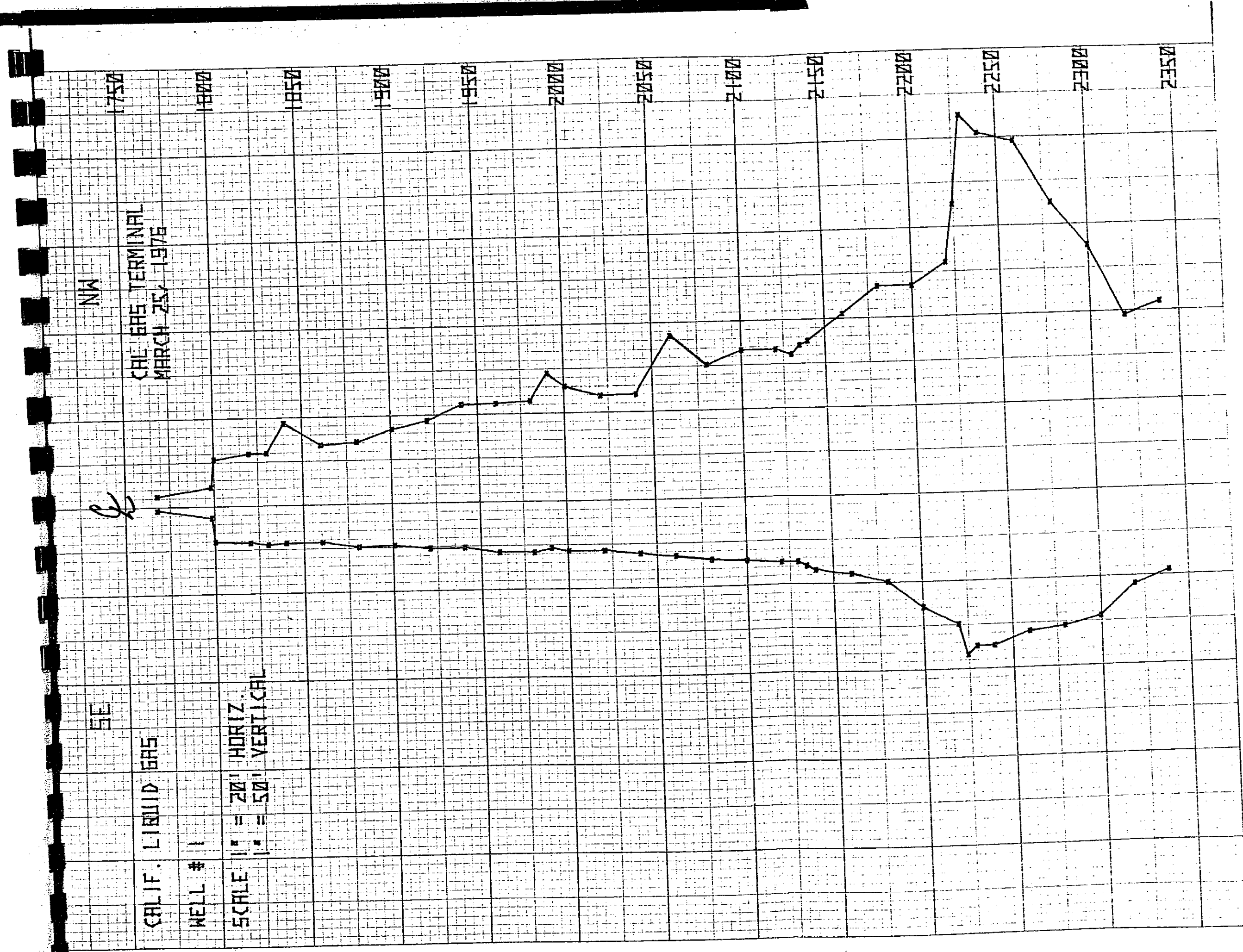
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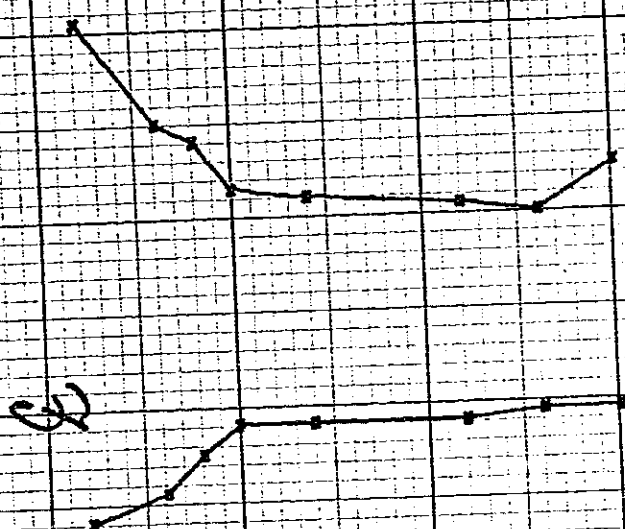




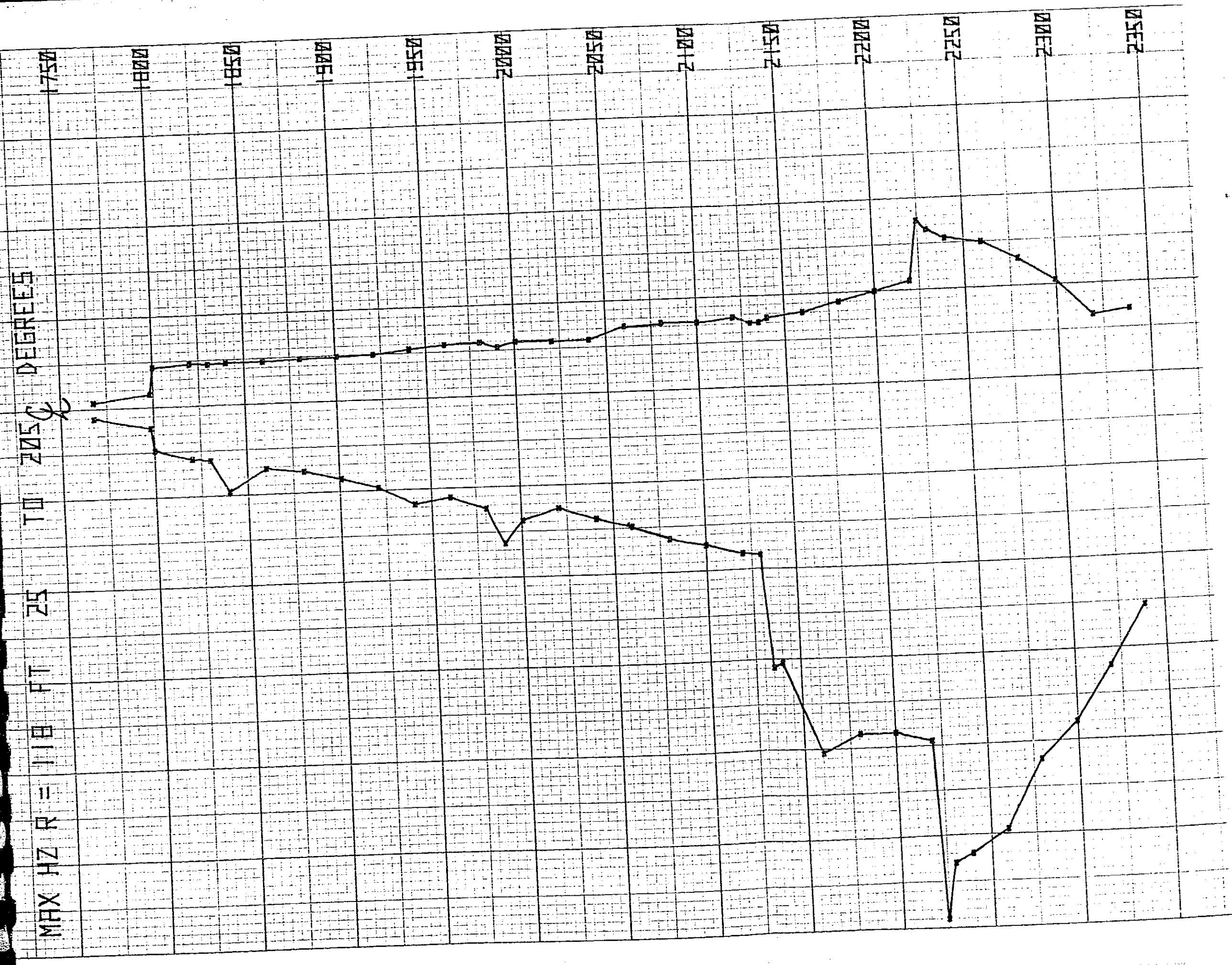
SN/REV DEC 2-72N-RUN, MATICOPA Co., JRP, STORAGE WELL #1

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SR/WR SEC 2-E2N-RW, Maricopa Co. JRP. STORAGE WELL #1

2350 2400 2450 2500 2550 2600 2650 2700

DEGREES

TO 205

25

FT

MAX HZ R = 118

2





Fife Symington
Governor

State of Arizona
Arizona Geological Survey

416 W. Congress, Suite 100
Tucson, Arizona 85701
(520) 770-3500



Larry D. Fellows
Director and State Geologist

April 16, 1997

Ms. Linda Brennan
Amerigas
Box 858
Valley Forge, PA 19482

Re: Roach-Baker No. 1 well, Permit No. 617
Performance Bond No. 210108
Safeco Insurance Company of America

Dear Ms. Brennan:

Our records show that the well drilled under the referenced bond was plugged and abandoned in compliance with applicable rules on November 11, 1988, and that a replacement well, Roach-Baker No. 1A, was drilled under Safeco performance bond no. 5516428.

As a result, this letter will serve as written permission of the Oil and Gas Conservation Commission of the State of Arizona to cancel the referenced bond no. 210108.

Sincerely,

A handwritten signature in cursive script, reading "Steven L. Rauzi".

Steven L. Rauzi
Oil & Gas Administrator

enclosure: copy of referenced bond

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS

Bond Serial No. 210108

That we: California Liquid Gas Corporation

of the County of Sacramento in the State of California

as principal, and Safeco Insurance Company of America

of Seattle, Washington

AUTHORIZED TO DO BUSINESS WITHIN the State of Arizona.

as surety, are held and firmly bound unto the State of Arizona and the Oil and Gas Conservation Commission, hereinafter referred to as the "Commission", in the penal sum of \$5,000.00 lawful money of the United States, for which payment, well and truly to be made, we bind ourselves, and each of us, and each of our heirs, executors, administrators or successors, and assigns jointly and severally, firmly by these presents.

The conditions of this obligation are that, whereas the above bounden principal proposes to drill a well or wells for oil, gas or stratigraphic purposes in and upon the following described land situated within the State, to-wit: The Southwest quarter of the Northwest quarter of Section 2, Township 2 North, Range 1 West of the G&SRB&M, County of Maricopa, Arizona

(May be used as blanket bond or for single well)

NOW, THEREFORE, if the above bounden principal shall comply with all the provisions of the Laws of this State and the rules, regulations and orders of the Commission, especially with reference to the requirements of A.R.S. § 27-516, providing for the proper drilling, casing and plugging of said well or wells, and filing with the Oil and Gas Conservation Commission all notices and records required by said Commission, then in the event said well or wells do not produce oil or gas in commercial quantities, or cease to produce oil or gas in commercial quantities, this obligation is void; otherwise it shall remain in full force and effect.

Whenever the principal shall be, and declared by the Oil and Gas Conservation Commission in violation of the Laws of this State and the rules, regulations and orders of the Commission, the surety shall promptly:

1. Remedy the violation by its own efforts, or
2. Obtain a bid or bids for submission to the Commission to remedy the violation, and upon determination by the Commission and the Surety of the lowest responsible bidder, arrange for a contract between such bidder and the Commission, and make available as work progresses sufficient funds to pay the cost of remedying the violation; but not exceeding, including other costs and damages for which the surety may be liable hereunder, the amount set forth in the first paragraph hereof.

Liability under this bond may not be terminated without written permission of this Commission.

WITNESS our hands and seals, this 27th day of July, 1973

California Liquid Gas Corporation

Principal Vice President

WITNESS our hands and seals this 27th day of July, 1973

Safeco Insurance Company of America

Attorney-in-fact

(If the principal is a corporation, the bond should be executed by its duly authorized officers, with the seal of the corporation affixed. When principal or surety executes this bond by agent, power of attorney or other evidence of authority must accompany the bond.)

Approved Date: 9-7-73
STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION
By: [Signature]

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION
Bond
File Two Copies
Form No. 2
RECEIVED
AUG 28 1973
O & G CONS. COMM.

Permit No. 1017

AmeriGas
America's Propane Company

617

November 20, 1990

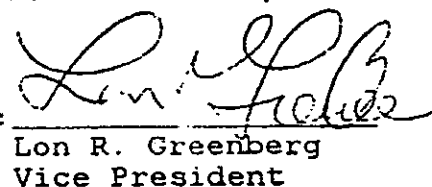
To Whom It May Concern:

Effective November 15, 1990, AP Propane, Inc. amended its Certificate of Incorporation whereby its name was changed to AmeriGas Propane, Inc.

Very truly yours,

AMERIGAS PROPANE, INC.

By:


Lon R. Greenberg
Vice President

AmeriGas

America's Propane Company

617

To Whom It May Concern:

This will serve to confirm the corporate history and proper corporate name of the entity operating the underground storage facility and Terminal at Bumstead (Waddell). This facility was originally constructed and operated by Cal Gas Corporation. On May 10, 1987, AP Propane, Inc. acquired all of the stock of Cal Gas Corporation and Cal Gas was merged into AP Propane, effective July 27, 1987. Thereafter, AP Propane continued to do business as Cal Gas for a period of time, but reidentified the name of its facilities nationwide to its trade name AmeriGas by the Spring of 1990. Effective November 15, 1990, AP Propane, Inc. changed its name to AmeriGas Propane, Inc. and continued to use the trade name AmeriGas. These facilities continue to be operated by AmeriGas Propane, Inc., trading as AmeriGas.

CRONIN & STANEWICH
Name: Robert S. Cronin, Jr. Esq.
Address: 3636 North Central Avenue, #560
City, State, Zip: Phoenix, Arizona 85012
Telephone: (602)222-4647
State Bar Code: 002573
Client: Attorneys for Defendants

ARIZONA SUPERIOR COURT, County of Maricopa

AP PROPANE, INC., a corporation, and
CERTAIN UNDERWRITERS AT LLOYD'S
LONDON, and COMPANIES SUBSCRIBING TO
POLICY NO. 86/0139N,

Plaintiffs,

v.

FENIX & SCISSON, INC.; and DOES 1
through 25,

Defendants.

ACTION NO: CV 89-06608

**AMENDED
CIVIL SUBPOENA**

☒ **Duces Tecum**

Assigned to the Hon. Armando de Leon - Div. 26

THE STATE OF ARIZONA TO: Custodian of Records
State of Arizona
Oil & Gas Conservation Commission

YOU ARE COMMANDED to appear and give testimony at the time and place specified below:

BEFORE WHOM APPEARANCE TO BE MADE: COURT REPORTER/NOTARY PUBLIC

DATE AND TIME OF APPEARANCE: July 10, 1991 at 10 a.m.
(Previously scheduled, July 11, 1991 at 10 a.m.)

PLACE OF APPEARANCE: Law offices of CRONIN & STANEWICH, 3636 North Central
Avenue, #560, Phoenix, Arizona 85012

YOU ARE ALSO COMMANDED to bring with you and produce these books, papers, documents,
or tangible things: See the attached Exhibit A for documents to be produced.

**THIS SUBPOENA IS FOR DEPOSITION TESTIMONY. PLEASE CONTACT THIS OFFICE TWO DAYS
PRIOR TO CONFIRM YOUR AVAILABILITY. (602)222-4647.**

In the event this Subpoena is for appearance before the Court, please contact the division of this
Court stated above to determine if the trial or hearing time has been changed. ARS §§ 22-217, 12-2211;
RCP 45(a), 53(e).

You have been subpoenaed by: Defendants

whose attorney's name, address, and telephone number is: Same as above.

**YOU ARE HEREBY NOTIFIED THAT ANY FAILURE TO OBEY THIS SUBPOENA WITH-
OUT ADEQUATE EXCUSE MAY BE DEEMED A CONTEMPT OF THE COURT, AND A CIVIL
ARREST WARRANT MAY BE ISSUED. A CIVIL ARREST IS AN ORDER DIRECTING ANY
POLICE OFFICER IN ARIZONA TO ARREST YOU AND BRING YOU BEFORE THIS COURT
FOR FUTURE PROCEEDINGS.**

SIGNED AND SEALED this date:

Clerk

By _____
Deputy Clerk

CIVIL SUBPOENA

CRONIN & STANEWICH
Name: Robert S. Cronin, Jr., Esq.
Address: 3636 North Central Avenue, Suite 560
City, State, Zip: Phoenix, Arizona 85012
Telephone: (602) 222-4647
State Bar Code: 002573
Client: Attorneys for Defendants

COPY

JUN 26 '91

ARIZONA SUPERIOR COURT, County of Maricopa

AP PROPANE, INC., a corporation,
and CERTAIN UNDERWRITERS AT
LLOYD'S LONDON, and COMPANIES
SUBSCRIBING TO POLICY NO.
86/0139N,

Plaintiffs,

vs.

FENIX & SCISSON, INC.; and
DOES 1 through 25,

Defendants.



NORTH ALLEN, CLERK
S. OLESKI
DEPUTY CLERK

ACTION NO: CV 89-06608

AMENDED

NOTICE OF DEPOSITION
WITH CERTIFICATION OF SERVICE

Assigned to the Hon. Armando De Leon

YOU ARE HEREBY NOTIFIED that, pursuant to RCP 26 and 30, the deposition will be taken upon oral examination of the persons whose names and addresses are stated below at the time and place stated below before an officer authorized by law to administer oaths. If the names are not known, a general description sufficient to identify those persons or the particular classes or groups to which those persons belong is given below.

PERSONS TO BE EXAMINED: Custodian of Records
State of Arizona
Oil & Gas Conservation Commission
5150 North 16th Street, Suite B141
Phoenix, Arizona 85016

DATE AND TIME OF DEPOSITION: July 10, 1991 at 10 a.m.
(Previously scheduled, July 11, 1991 at 10 a.m.)

PLACE OF DEPOSITION: Law offices of CRONIN & STANEWICH, 3636 North
Central Avenue, #560, Phoenix, Arizona 85012

The undersigned certifies that copies of this notice have been served on the below date as follows:

Served by: ☒ Mailing; ☐ Delivering a copy to: R. Richard Audley, Esq.

Served by: ☒ Mailing; ☐ Delivering a copy to: W. Lloyd Benner, Esq.

Served by: ☒ Mailing; ☐ Delivering a copy to: Voss & Associates

Dated 6/26/91



Attorney for Defendants

EXHIBIT A

Related to drilling permit #865. Well #1. Roach-Baker. API#02-013-20006. Section 2, T. 2N. RIW, GSRB&M.

Cavern #1, Goodyear, Arizona. Bond #210108. Any and records, reports, memoranda, documents, items of correspondence, photographs or other writings in the possession of the Arizona Gas and Oil Conservation Commission and contained within its files pertinent to the liquid propane gas leakage incident which occurred at 7511 North Disart, Glendale on or before 3/16/87 through 4/3/87.

SAUTER PROCESS SERVICE
EXPENSE ACCOUNT
45 W. JEFFERSON, NO. 220 258-2293
PHOENIX, AZ 85003

9174
91-2/1221

PAY TO THE ORDER OF State of Arizona \$ 13.00
Thirteen and 00/100 DOLLARS

VALLEY BANK CENTER OFFICE (137)
P.O. Box 71
Phoenix, Arizona 85001

FOR CV 89-06608

Joe Zwerzynski

⑆122100024⑆ 9174 ⑈0080⑈404⑆



Oil and Gas Conservation Commission

STATE OF ARIZONA

5150 N. 16th STREET, SUITE B-141
PHOENIX, ARIZONA 85016
PHONE: (602) 255-5161

PN 617 + 965

August 1, 1990

Mr. Gus Harbushka
AmeriGas Terminal
14702 West Olive Ave.
Peoria, AZ 85345

Dear Gus:

I am reviewing the active bonds on file with this Commission.

One of these bonds (210108) is for Roach-Baker 1 which was recently plugged and abandoned. Since the Roach-Baker 1A has its own bond (5516428), you may now request cancellation of bond 210108.

Sincerely,

Steve

Steven L. Rauzi
Oil & Gas Specialist

Enclosure



PB-KBB Inc.

Subsurface Systems & Technology

11767 Katy Freeway #810
Houston, Texas 77079
P.O. Box 19672
Houston, Texas 77224
(713) 496-5590 - Telex #792539
Telecopy (713) 496-5658

December 14, 1988

Mr. Dan Brennan
Executive Director
ARIZONA OIL & GAS COMMISSION
3110 N. 19th Avenue, Suite 190
Phoenix, Arizona 85015

Reference: AP Propane Inc. dba Cal Gas
Well No. 1 Roach-Baker
Maricopa County, Arizona
Plugging Permit No. 617

Dear Mr. Brennan:

Please find enclosed a copy of the Final Print of Atlas Wireline's caliper log for Well No. 1 Roach-Baker.

Also enclosed are the signed originals of the Sundry Report and Plugging Record for the well.

Sincerely,

Tim Moran,
Project Manager

TM/jr
Enclosures



PB-KBB Inc.

Subsurface Systems & Technology

11767 Katy Freeway #810
Houston, Texas 77079
P.O. Box 19672
Houston, Texas 77224
(713) 496-5590 - Telex #792539
Telecopy (713) 496-5658

December 7, 1988

Mr. Dan Brennan
Executive Director
Arizona Oil & Gas Commission
3110 N. 19th Avenue, Suite 190
Phoenix, Arizona 85015

RE: AP Propane Inc. dba Cal Gas
Well No. 1 Roach-Baker
Maricopa County, Arizona
Plugging Permit No. 617

Dear Mr. Brennan:

Enclosed please find the Plugging Report for Cal Gas' Well No. 1
Roach-Baker.

If you have any questions or require additional information, please
call.

Sincerely,

Tim Moran
Project Manager

TM/sbo
Enclosure

cc: Don Flemmons, Cal Gas - Sacramento
Gus Harbushka, Cal Gas - Phoenix



Oil and Gas Conservation Commission

STATE OF ARIZONA

3110 N. 19th AVENUE, SUITE 190

PHOENIX, ARIZONA 85015

PHONE: (602) 255-5161

November 8, 1988

Mr. Don Flemmons
Director of Terminals
Cal Gas Corporation
8401 Gerber Road
P. O. Box 28397
Sacramento, CA 95828-0397

Dear Mr. Flemmons:

Pursuant to your request of November 4, 1988, and in recognition of the difficulties you have encountered in plugging the No. 1 Roach-Baker well, we hereby grant an extension of the validity of your permit for the drilling of No. 1A Roach-Baker for 60 days from November 7, 1988.

Very truly yours,


Daniel J. Brennan
Executive Director



PB-KBB Inc.

Subsurface Systems & Technology

11767 Katy Freeway #810
Houston, Texas 77079
P.O. Box 19672
Houston, Texas 77224
(713) 496-5590 - Telex #792539
Telecopy (713) 496-5658

May 11, 1988

Mr. Rudy Ybarra
Arizona Oil & Gas Commission
3110 N. 19th Avenue
Suite 180
Phoenix, Arizona 85105

RE: AP Propane, Inc. dba Cal Gas Corp.
Plugging Permit No. 617
Maricopa County, Arizona

Dear Mr. Ybarra:

Enclosed please find the supplemental Sundry Report presenting the revised plugging program for Cal Gas Well No. 1 Roach-Baker.

If you have any questions or require additional information, please call.

Sincerely,

Tim Moran
Project Manager

TM:di

Enclosure

cc: Don Flemmons, Sacramento, Cal Gas
Gus Harbushka, Phoenix Terminal, Cal Gas



Oil and Gas Conservation Commission

STATE OF ARIZONA

3110 N. 19th AVENUE, SUITE 190

PHOENIX, ARIZONA 85015

PHONE: (602) 255-5161

April 8, 1988

Mr. David Harbushka
Terminal Manager
Cal Gas Corporation
14702 West Olive Avenue
Peoria, Arizona 85345

Dear Gus:

I would like to express my concern over the continued delays in the redrilling of the number 1 well in the Cal Gas Facility on Dysart Road. The concern is not so much for the number 1 well, but the impact it has on scheduling the required surveys of cavern size and well integrity on the other two wells on the property.

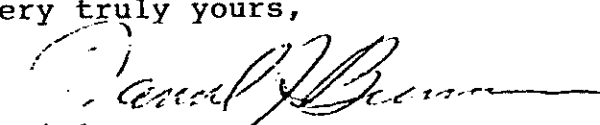
As you are aware, our rules require a capacity determination for each cavern at least once every five years (R 12-7-181. 1.i.iv). Since this has not been accomplished, neither well is in compliance with our rules.

Since the leak last year from No. 1 well occurred by reason of corrosion of the casing, we have also stressed the importance of running corrosion-detection logs in wells No. 2 and 3. We understand that both the capacity verification and the corrosion logs can be run only when the holes are full of water and free of LPG.

Regardless of whether the company decides to drill a new hole into the number one cavern, it is still necessary for these logs to be run. In the absence of movement toward drilling the new hole, it may be necessary for the Commission to require the surveys to be run in the near future.

We are hoping that it will be possible to bring the two operating wells into compliance within the next two months and before you enter a busier time of the year.

Very truly yours,


Daniel J. Brennan
Executive Director



Oil and Gas Conservation Commission

STATE OF ARIZONA

3110 N. 19th AVENUE, SUITE 190

PHOENIX, ARIZONA 85015

PHONE: (602) 255-5161

November 10, 1987

Mr. Donald L. Flemmons
Director of Terminals
AP Propane, Inc.
P.O. Box 28397
Sacramento, CA 95828

Re: Gas Storage Project
Maricopa County

Dear Don:

Enclosed please find the approved forms required to plug and abandon Well No. 1 Roach-Baker and to drill replacement Well No. 1A Roach-Baker; including a Report on Proposed Operations for each well proposal. The receipt for the well fee is also enclosed.

If we can be of further assistance, please let us know.

Yours truly,

R. A. Ybarra
R. A. Ybarra
Enforcement Director

RAY:lr
Encl.

ORGANIZATION REPORT

SEP 28 1987

O & G C O N S E R V A T I O N

Full Name of the Company, Organization, or Individual

AP Propane, Inc., dba Cal Gas

Post Office Address (Box or Street Address)

P.O. Box 28397, Sacramento, CA 95828

Plan of Organization (State whether organization is a corporation, joint stock association, firm or partnership, or Individual)

Corporation

Purpose of Organization (State type of business in which engaged)

Wholesale and Retail LP Gas and Related Activities

If a reorganization, give name and address of previous organization.

Cal Gas Corp. P.O. Box 28397, Sacramento, CA 95828

If a foreign corporation, give
(1) State where incorporated

Delaware

(2) Name and post office address of state agent

CT Corp. System
3225 North Central Ave.
Phoenix, AZ 85012

(3) Date of permit to do business in state

8/10/87

Principal Officers or Partners (if partnership)
NAME

Robert C. Mauch

TITLE

President

POST OFFICE ADDRESS

P.O. Box 858
Valley Forge, PA 19482

Ronald D. Paliughi

Senior Vice Pres. Oprtns-West

P.O. Box 28397
Sacramento, CA 95828

Joseph H. Pettus

Senior V.P., Supply & Trans.

P.O. Box 28397
Sacramento, CA 95828

Lon R. Greenberg

V.P., General Counsel & Secrt

P.O. Box 858
Valley Forge, PA 19482

Robert L. Rawls

V.P. Intermountain Region

2950 S. Jamaica Court, Suite 104
Aurora, CO 80014-2626

William M. Graff

Treasurer

P.O. Box 858
Valley Forge, PA 19482

DIRECTORS NAME

Charles L. Ladner

POST OFFICE ADDRESS

P.O. Box 858, Valley Forge, PA 19482

Thomas V. Lefevre

P.O. Box 858, Valley Forge, PA 19482

Robert C. Mauch

P.O. Box 858, Valley Forge, PA 19482

James A. Sutton

P.O. Box 858, Valley Forge, PA 19482

CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the Director of Terminals of the AP Propane, Inc., dba Cal Gas (company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.

Signature

Date

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION

Organization Report
File One Copy

Form No. 1



August 20, 1987

Arizona Dept. of Health Services
Water Pollution Compliance Unit
Office of Waste and Water Quality Management
Central Palm Plaza Building
2005 North Central Avenue
Phoenix, AZ 85004
Attn: Mr. John Rampe

U.S. Environmental Protection Agency
Underground Injection Control Center
215 Freemont Street
San Francisco, CA 94105
Attn: Mr. Brian Cox

Arizona Oil & Gas Conservation Commission
3110 N. 19th Ave., Suite 190
Phoenix, AZ 85015
Attn: Mr. Daniel Brennan

Gentlemen:

This is to confirm that representatives of AP Propane, Inc., successor through merger to Cal Gas Corporation, will meet with representatives of your agencies to update you on activities at the LPG storage facility involved in the emergency incident in Glendale, AZ in April of this year.

The meeting will be held at 10:00 a.m. on Thursday, September 3, 1987 at the offices of the Arizona Department of Environmental Quality, 2005 North Central, Phoenix, AZ. Kathleen Carson of DEQ (602/257-2369) will advise the parties of the meeting room number.

EPA - Region IX representatives, because of schedule conflicts and budget constraints, will not be able to attend the meeting. We are arranging an alternate date to update them in San Francisco.

We look forward to seeing you on September 3rd.

Sincerely,

AP PROPANE, INC., dba CAL GAS

Don Flemmons

Donald L. Flemmons
Director of Terminals

cc: M.G. Jordan, Cal Gas-Legal
D.J. Harbushka, Cal Gas-Phoenix Terminal
W. Farran, UGI
R. Knauss, UGI

DLF:ja



July 7, 1987

JUL 14 1987

0 3 0 1 1 1 1 1

Arizona Dept. of Health Services
Water Pollution Compliance Unit
Office of Waste and Water Quality Management
Central Palm Plaza Building
2005 North Central Avenue
Phoenix, AZ 85004
Attn: Mr. John Rampe

U.S. Environmental Protection Agency
Underground Injection Control Center
215 Freemont Street
San Francisco, CA 94105
Attn: Mr. Brian Cox

Arizona Oil & Gas Conservation Commission
3110 N. 19th Ave., Suite 190
Phoenix, AZ 85015
Attn: Mr. Daniel Brennan

Gentlemen:

Cal Gas has now prepared an estimated timetable for the installation of subsurface testing equipment at our underground LPG storage cavern site near Luke Air Force Base. For your information, a copy of this estimated timetable is attached.

This program is based upon the recommendations of geological consultants hired by Cal Gas and the timetable is subject to change without further notice.

If you have any questions about the timetable please do not hesitate to give us a call.

Sincerely,

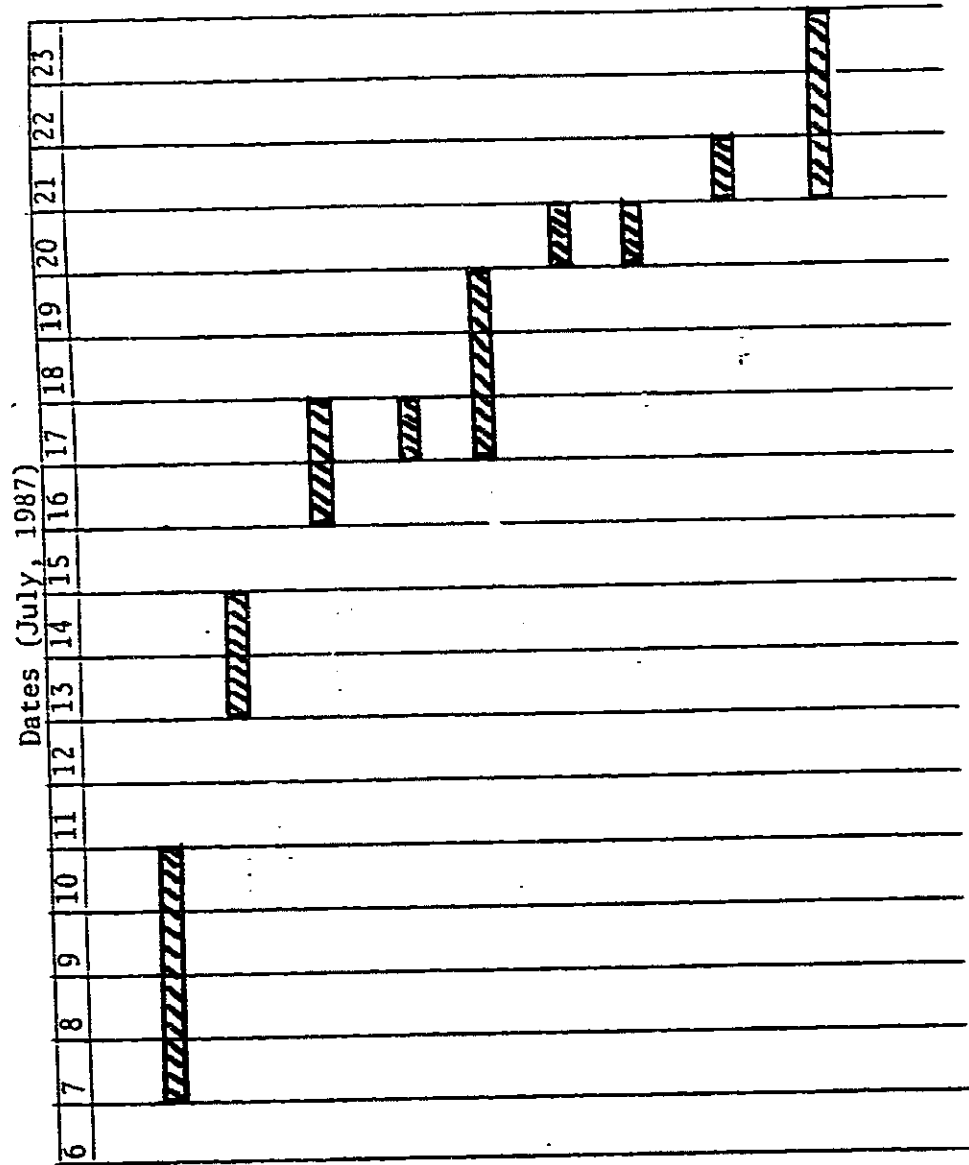
R.D. Collins
Mgr., Transshipment Terminals

cc: D.L. Flemmons, Cal Gas-Terminals
M.G. Jordan, Cal Gas-Legal
D.J. Harbushka, Cal Gas-Phoenix Terminal
J. Goodbrake, Southwest Salt Co.
Roach & Baker Partnership
W. Farran, UGI

RDC:ja
Attachment

July 8, 1987

SUBSURFACE TESTING PROGRAM
ESTIMATED TIME LINE



1. Geological study for determining drill location.
2. Drive 30' test pipe testing for shallow high pressure pockets.
3. Move in and set up drilling rig.
4. Drill to 30' depth and cement casing for blowout prevention.
5. Drill bore 20' into water zone.
6. Run induction electric sonic log gamma ray neutron logs.
7. Run side wall sampler.
8. Install PVC casing and cement to surface.
9. Establish 13 permanent preventive geological monitoring stations.



Oil and Gas Conservation Commission

STATE OF ARIZONA

3110 N. 19th AVENUE, SUITE 190

PHOENIX, ARIZONA 85015

PHONE: (602) 255-5161

M E M O R A N D U M

Date: June 4, 1987

To: Commissioners

From: R. A. Ybarra

Re: Remedial Testing Program - Cal Gas Corp. No 1
Storage Well

The objective of this program was to: 1) locate the leak(s) in the 9 5/8" casing, 2) repair leak(s) in the casing, and 3) conduct a mechanical integrity test of the casing shoe (seat).

Casing history prior to entry of well was as follows: 14" Cem. 32'; 9 5/8" Cem. 1578'; 7" Ld. 2731'. Total depth 3200'.

The rig was moved into location on May 18, 1978.

The 7" casing was pulled from the hole without any problem and a 9 5/8" casing scraper was run in the length of the 9 5/8" to prepare the hole for logging. On May 21, a Corrosion Log, a Newtron (Compensated) Log, and a Sonar Log were run. The following day a Cement Bond Log (CBL) was run while I was at the well site. The logging company (Dresser-Atlas) experienced some difficulty while logging the shallow intervals (400'-0') because water in this portion of the well was saturated with air bubbles, which affects (slows) the signal moving from the tool to the formation. The Corrosion Log indicated a hole in the casing at 100'.

well file v

Remedial Testing Program -
Cal Gas Corp. No. 1 Storage Well

6/4/87
Page 2

On May 23, a 9 5/8" packer on 3 1/2" drill pipe was set above the shoe of the 9 5/8" casing at 1565'. Newly made brine from the No. 2 cavity was injected into the cavity until the surface pressure reached 570#. This pressure held steady for 2 hours without a loss. This test indicated good integrity of the 9 5/8" casing seat at 1578'.

On May 24, the packer at 1565' was pulled and a drillable bridge plug was set at 1540'. All the brine in the hole above 1540' was circulated out and replaced with fresh water prior to running in a video camera to view the condition inside of the casing. The video scan picked up the hole at 100' to confirm the Corrosion Log and the fluid level was found at 108'. A steady stream of water was entering the hole, judged to be about 1/2" diameter. The packer was set at 149' and the casing was pressured to 510# for 1 hour without any loss. This test confirmed casing integrity between 149' and the bridge plug at 1540'. The packer was pulled and reset at 85' to test the casing above this point. The casing was pressured to 500#, losing 125# in 10 minutes. They raised the packer to 75' and pressured to 500#. This test also failed. A third pressure test with the packer set at 63' also failed. It was suspected that one or more of the many flanges and connections at the well head may be leaking. They decided to proceed to cement squeeze the hole at 100' and come back later and finish pressure testing.

With the drill pipe hanging at 149' they spotted 35 sacks of cement in the casing. They pressured on the cement incrementally to 95# and the well was shut in overnight. It was estimated that only 8 sacks of cement were squeezed out into the formation.

On May 25, the pressure was down to 75#, a loss of 20# overnight. They entered the well and found the top of the cement at 85' and again pressure tested to 500# against the cement. The pressure dropped to 400# in 10 minutes. They then drilled out cement to 121' and pressured against the hole at 100', breaking down the hole with 200#. Another 35 sacks of cement were spotted across the hole and this time, with something to push against, they raised the pressure to 500# and closed the well in overnight.

Remedial Testing Program --
Cal Gas Corp. No. 1 Storage Well

6/4/87
Page 3

On May 26, the pressure was down to 350#. The top of the cement was found at 102', two feet below the hole at 100'. They pressured against the hole to 500# and in 10 minutes the pressure dropped to 350#. Convinced that the pressure was leaking through some of the connections at the wellhead, they decided to set the packer at 18' to isolate the wellhead connections and pressure test to 500#. The pressure held for 1 hour without a noticeable drop. It was estimated that 35 sacks were squeezed through the hole into the formation.

After the testing was completed and approved, instructions were sent down to release all equipment and service company personnel connected with this program. The well will remain shut in until the new owner, United Gas International, takes over June 1, 1987.

The new owner will decide whether to recomplete the well as proposed by Cal Gas or plug and abandon and drill a new hole down to the existing cavity. A new well can be drilled and equipped with casing sizes designed to deliver the desired volumes of product.

Recompletion of the old well as proposed will require additional work on the 9 5/8" casing before the operator is allowed to run in and cement the inner-string casing (7 7/8").

RAB:lme



Oil and Gas Conservation Commission

STATE OF ARIZONA
3110 N. 19th AVENUE, SUITE 190
PHOENIX, ARIZONA 85015
PHONE: (602) 255-5161

May 11, 1987

Mr. Don Flemmons
Director of Terminals
Cal Gas Corporation
8401 Gerber Road
P. O. Box 28397
Sacramento, CA 95828-0397

RE: Workover Procedures, Phase 2
Well No. 1 Roach-Baker
Sec. 2, T.2N., R.1W.
Maricopa County

Dear Mr. Femmons:

This is in response to your letter of May 8, 1987 requesting the Commission's approval of your proposed workover procedures on subject well.

Regarding Item 5, pressure-testing of 7-5/8" casing. If pressure-testing results are not acceptable, we presume that at this point in your program you would plan to recement the casing.

Other than that, you have the Commission's approval.

Sincerely,

R. A. Ybarra
R. A. Ybarra
Enforcement Director

/kb

cc: Mr. Brian Cox
U. S. Environmental Protection Agency
Underground Injection Control Center
215 Fremont Street
San Francisco, CA 94105



May 8, 1987

Arizona Oil and Gas Commission
3110 N. 19th Avenue, Suite 180
Phoenix, AZ 85015
Attention: Daniel Brennan

U. S. Environmental Protection Agency
Underground Injection Control Center
215 Fremont Street
San Francisco, CA 94105
Attention: Brian Cox

Re: Request for Approval of Workover
Procedures - Cavern #1

Gentlemen:

Attached for your review and approval is phase two of our program where we begin installing the casing liner after the testing of the existing casing and cavern is completed.

Since we will have to bring in a workover rig and logging truck to complete the first phase of our program, we would very much appreciate your quick review of this workover program so that there will not be a time delay. If we have a delay between the testing program and the workover program, it will become very costly for us to have to send the equipment away and then bring it back.

I would like to take this opportunity to express our appreciation for the manner in which you have worked with us to resolve our problem in a timely and professional manner.

Sincerely,

A handwritten signature in cursive script that reads "Don Flemmons".

Don Flemmons
Director of Terminals

CAL GAS CORPORATION
REMEDIAL WORKOVER PROGRAM
CAL GAS STORAGE WELL NO. 1

The objectives of this workover are:

1. Install a 7-5/8" casing liner and cement to the surface.
2. Conduct a mechanical integrity test of the well and new installation.
The program is recommended for use as a general guideline for the remedial workover. Actual conditions encountered during the process will dictate the required steps to be taken.

Install Casing Liner

1. Run 7-5/8 inch 26.4#, K-55, LT&C to +/- 1550 ft. On the bottom joint, install a stab-in float collar on top and guide shoe on bottom. Centralize with weld-on lugs every third joint. Internally pressure test each coupling to 3000 psi.
2. RIH with drill pipe and stab-in tool. Circulate one hole volume.
3. Cement the 7-5/8 inch O.D. casing to surface with Class "A" or "H" Neat cement with 2% CaCl. W.O.C. 24 hrs.
4. After 8 hours W.O.C., cut off 7-5/8 inch casing at surface and install wellhead spools.
5. After 24 hours W.O.C., conduct hydrostatic pressure test of casing with brine to 800 psi surface pressure for 1 hour minimum.
6. RIH, drill out cement and bridge plug.
7. Rig up logging unit and run cement bond log.

8. Run 5-1/2 inch, 15.5#, K-55, LT&C to +/- 2730 ft.
9. Rig down workover rig.
10. Install wellhead components and hook up surface lines.

Conduct Mechanical Integrity Tests

11. Close produce wellhead valves and inject brine until cavern reaches test pressure. A brine wellhead pressure of 570 psig will impose a test pressure of approximately 1390 psig at the casing shoe.
12. Shut-in and monitor. Reinject brine as required to maintain test pressure.
13. Install the following test equipment on both brine and product wellhead connections: 1) deadweight guage, 2) pressure guage, 3) pressure recorder. In addition, install a temperature guage or temperature recorder at product wellhead spool.
14. When cavern is judged to be stable, rig up logging truck and prepare to run interface log.
15. Inject propane at a low rate while tracking interface down with log. Bleed off prine as required to maintain test pressure. Meter volume of injected propane and correlate with interface depths to "strap" the hole. Continue to inject propane until interface reaches approximately 20-30 ft. below casing shoe (+/- 1600 ft.).
16. Shut cavern in for 24 hours.
17. Run interface log and record initial test conditions - product and brine pressure and wellhead temperatures.

18. Record deadweight pressure and wellhead temperatures at approved time intervals (minimum 4 hours). Monitor 9-5/8 inch x 7-5/8 inch in annulus for leaks.
19. After 72 hours, run interface log and record final test conditions - product and brine pressures and wellhead temperatures.
20. If test results are unacceptable, extend test as required.
21. If test results are acceptable, rig down logging truck and test equipment.



May 4, 1987

Arizona Oil & Gas Commission
3110 N. 19th Avenue, Suite 180
Phoenix, AZ 85015
Attention: Daniel Brennan

U.S. Environmental Protection Agency
Underground Injection Control Center
215 Freemont Street
San Francisco, CA 94105
Attention: Brian Cox

Gentlemen:

Re: Request For Approval of Testing Procedure
Cavern #1, Glendale Arizona

Cal Gas Corporation has provided both of your agencies with the proposal prepared by Fenix & Scisson, dated April 15, 1987, which we received on April 22, 1987.

The proposal covered both a program for testing and a program for reworking Cavern #1. There has apparently been some misunderstanding regarding our submission of the Fenix & Scisson proposal. We are not, at this time, requesting approval of the reworking program because we cannot evaluate any reworking proposal until we know the location and nature of the leak.

We are asking both your agencies for approval of a testing program only, not a rework program. We are submitting, for your approval, the attached testing program which we believe is in conformance with our recent discussions.

Once testing is completed, we will be in a position to propose reworking or other options to your agencies.

Please give us your response to this request as soon as possible, as the delay in testing is also delaying other matters.

Sincerely,

CAL GAS CORPORATION

A handwritten signature in dark ink, appearing to read "Don Flemmons".
Donald L. Flemmons
Director of Terminals



Oil and Gas Conservation Commission

STATE OF ARIZONA

3110 N. 19th AVENUE, SUITE 190

PHOENIX, ARIZONA 85015

PHONE: (602) 255-5161

May 1, 1987

Mr. Don Flemmons
Director of Terminals
Cal Gas Corporation
P. O. Box 28397
Sacramento, CA 95828

Re: Cal Gas Corp.
Well No. 1 Roach-Baker
Workover Program

Dear Mr. Flemmons:

This letter follows your telephone conversation with Dan Brennan on April 29, 1987, pertaining to approval of subject program by April 29. The program was dated April 15, 1987, and we did not receive it until April 27.

We find that your program does not address some of our concerns and for this reason I suggested at one of the daily meetings at Cal Gas that we should meet as soon as the No. 1 cavity was emptied and together develop a remedial plan which would take into consideration some of the Commission's recommendations.

The Commission's main objective in this workover is that the well be recompleted in a manner that will prevent, as far as possible, damage to life, health, property, and the natural resources (particularly fresh water). We know of no better way to accomplish this than by having two competent strings of casing in the hole with all annular space behind the casings cemented fully to the surface. Therefore, please expand your program to include the following recommendations and refile:

1. Run a Cement Bond Log in addition to the logs listed in step 11,
2. Perforate and cement-squeeze poorly cemented sections behind the 9-5/8" casing, especially these sections opposite fresh-water intervals,
3. Cement-squeeze all casing leaks, and
4. Run a Cement Bond Log after cementing of the 7-5/8" casing. Recement 7-5/8" casing if necessary.

A sundry notice (Form 25) must also be filed. Copy enclosed.

If you have any questions pertaining to this matter, please call me or Dan Brennan.

Sincerely,

R. A. Ybarra

R. A. Ybarra
Enforcement Director

/kb

Enclosure



April 24, 1987

Oil and Gas Commission
State of Arizona
3110 N. 19th Ave., #190
Suite 420
Phoenix, AZ 85015

Attn: Mr. Dan Brennan

Dear Mr. Brennan:

Attached for your review and approval is a copy of Fenix & Scisson's plans for testing and repairing our storage cavern #1 at our Luke underground storage facility. Also enclosed is a booklet of date indetical to the booklet we gave the EPA office in San Francisco on April 23rd.

Nathan Lau and Brain Cox of the San Francisco EPA office said they would try to give us an answer by next Wednesday (April 29th) whether our testing procedures were acceptable or not. If at all possible, we would very much appreciate having your response by the 29th as well so that we can determine the cause and location of our problem.

I would like to take this opportunity to thank you for your assistance in helping us resolve our problem with our storage facility.

If you need any further information, please give me a call at 916-423-2010.

Sincerely,

A handwritten signature in cursive script, reading "Don Flemmons".

Donald L. Flemmons
Director of Terminals

DLF:ja
Enclosures



March 27, 1987

Oil & Gas Commission
State of Arizona
Attention: Mr. Daniel Brennan
1645 West Jefferson, Suite 420
Phoenix, AZ 85007

Department of Environmental Health Safety
State of Arizona
Attention: Mr. Tony Potucek
2005 North Central Avenue
Phoenix, AZ 85004

U.S. Environmental Protection Agency
Underground Injection Control Section
Attention: Mr. Nate Lau
215 Fremont Street
San Francisco, CA 94105

Gentlemen:

This is to confirm oral notification to your agencies given this day.

Cal Gas Corporation has experienced a pressure drop in its underground salt dome propane storage Cavern #1, at 7511 North Dysart Road, Glendale, Arizona. Steps are being taken to empty Cavern #1 as quickly as possible into an adjacent cavern so that an evaluation of the problem can be made and remedial action taken. We estimate that the cavern will be empty by April 10, 1987.

Cal Gas personnel noticed that pressure had dropped in Cavern #1 on Monday, March 16, 1987. Initially, we believed that the pressure drop was due to an unauthorized withdrawal of propane from the cavern over the weekend of March 14-15, 1987, as the office at the facility was broken into at that time. Propane injections and withdrawals were made to and from the cavern until March 20, 1987, as part of our normal business operations. Nothing unusual was noted.

The evening of March 20, 1987, the cavern was shut-in as usual for the weekend. The morning of March 23, 1987, when the cavern was opened, Cal Gas discovered the pressure had again dropped. On March 24, 1987, we began a

Oil & Gas Commission
State of Arizona
Attention: Mr. Daniel Brennan

Department of Environmental Health Safety
State of Arizona
Attention: Mr. Tony Potucek

U.S. Environmental Protection Agency
Underground Injection Control Section
Attention: Mr. Nate Lau
March 27, 1987
Page Two

shut-in pressure test to determine if pressure variations were due to normal operations or might indicate a problem with the cavern. We conducted a 36-hour pressure test, which indicated a pressure drop of 6 psi per hour. Because of this test, we believe an undefined problem exists in the cavern. We have begun procedures to transfer the propane in Cavern #1 to an adjacent cavern, which has not experienced pressure loss.

Cavern #1 has a total capacity of 37,208,178 gallons. Currently, 10,297,733 gallons of propane are stored in Cavern #1.

The Cal Gas personnel to contact regarding this matter are:

Ric Collins, Manager of Transshipment Terminals
8401 Gerber Road
Sacramento, CA 95828-0397
(916) 686-3538 (Work)
(916) 682-4138 (Home)

Gus Harbushka, Terminal Manager
7511 North Dysart Road
Glendale, AZ
(602) 935-2661 (Work)
(602) 932-1786 (Home)

Sincerely,

CAL GAS CORPORATION



R. D. Collins
Manager of Transshipment
Terminals

RDC/MGJ:pjp



SAFECO INSURANCE COMPANY OF AMERICA
GENERAL INSURANCE COMPANY OF AMERICA
FIRST NATIONAL INSURANCE COMPANY OF AMERICA
HOME OFFICE: 437 BROADWAY, N.E., SEATTLE, WASHINGTON 98105 (Each a Stock Insurance Company)
450 Sansome St. San Francisco, CA.

Contractor: CALIFORNIA LIQUID GAS CORPORATION Date: _____
Address: 8401 GERBER RD., SACRAMENTO, CALIFORNIA Bond Number 2210108
Description of Contract: DRILLING, EASING, ETC. - THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION
Include location and owner's contract number: 2, TOWNSHIP 2 NORTH, RANGE 1, WEST OF THE GILBERT, Co. OF MARICOPA, ARIZONA

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION
PHOENIX, ARIZONA

Contract Price \$ _____

8504315 N. 7th Avenue
Zip - 85013

Bond(s) \$ 5,000.00 PF

Owner: STATE OF ARIZONA Effective date 7-27-73

Without prejudicing your right or affecting our liability under our bond(s) described above, we would appreciate such of the following information as is now available.

Very truly Yours,
SAFECO INSURANCE COMPANIES

1. IF CONTRACT COMPLETED Approximate date of completion and/or acceptance _____ Final contract price _____
PLEASE STATE _____
2. IF CONTRACT UNCOMPLETED Approximate percentage or dollar amount of contract completed or delivered _____ Sales Tax _____
PLEASE STATE _____
Probable date of completion _____ Total _____

3. Are there any claims, assignments, stop notices or liens on file? ☐ Yes ☒ No

4. Remarks: (if any) Bond No. 2210108 in the amount of \$5,000 will remain in full force and effect until such time as Calif. Liquid Gas Corp. abandons this lease and is in full compliance with the rules and regulations of the Oil and Gas Conservation Commission, State of Arizona.

Date 2-5-74 Signature W.B. [Signature]

RETAIN THIS COPY

September 9, 1980

Jasmine Ehret, Insurance Dept.
California Liquid Gas Corp.
P.O. Box 28397
Sacramento, Calif. 95828

Re: Performance Bond #2210108

Dear Ms. Ehret:

Please be advised that the above captioned bond must remain in force as long as the associated facility is being actively used for underground storage.

Rule 101 of Arizona Rules and Regulations states: The liability under any bond may not be terminated without written approval of the Commission. This also applies to your bonds Nos. 2597625 and 2222218.

Yours truly,

Don Whittaker
Director
Enforcement Section

DW:os



A Dillingham Company

RECEIVED

SEP 8 1980

O & G CONS. COMM.

September 5, 1980

State of Arizona
Oil & Gas Conservation Commission
1645 W. Jefferson Suite 420
Phoenix, AZ.

Re: California Liquid Gas Corporation
Performance Bond #2210108
Effective Date 7/27/73

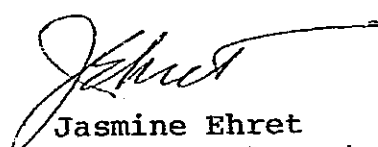
Gentlemen:

This bond has come up for renewal and upon checking our files, we were unable to determine whether or not this bond is still required by your Commission.

Would you please advise us if this bond is still necessary?

Thank you for your assistance.

Very truly yours,


Jasmine Ehret
Insurance Department

/je
enclosure

California Liquid Gas Corporation
P.O. Box 28397 Sacramento, CA 95828 (916) 428-7010
Telex: 37-7322

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS

Bond Serial No. 2210108

That we: California Liquid Gas Corporation

of the County of Sacramento in the State of California

as principal, and Safeco Insurance Company of America

of Seattle, Washington

AUTHORIZED TO DO BUSINESS WITHIN the State of Arizona.

as surety, are held and firmly bound unto the State of Arizona and the Oil and Gas Conservation Commission, hereinafter referred to as the "Commission", in the penal sum of \$5,000.00 lawful money of the United States, for which payment, well and truly to be made, we bind ourselves, and each of us, and each of our heirs, executors, administrators or successors, and assigns jointly and severally, firmly by these presents.

The conditions of this obligation are that, whereas the above bounden principal proposes to drill a well or wells for oil, gas or stratigraphic purposes in and upon the following described land situated within the State, to-wit: The Southwest quarter of the Northwest quarter of Section 2, Township 2 North, Range 1 West of the G&SRB&M, County of Maricopa, Arizona

(May be used as blanket bond or for single well)

NOW, THEREFORE, if the above bounden principal shall comply with all the provisions of the Laws of this State and the rules, regulations and orders of the Commission, especially with reference to the requirements of A.R.S. §27-516, providing for the proper drilling, casing and plugging of said well or wells, and filling with the Oil and Gas Conservation Commission all notices and records required by said Commission, then in the event said well or wells do not produce oil or gas in commercial quantities, or cease to produce oil or gas in commercial quantities, this obligation is void; otherwise it shall remain in full force and effect.

Whenever the principal shall be, and declared by the Oil and Gas Conservation Commission in violation of the Laws of this State and the rules, regulations and orders of the Commission, the surety shall promptly:

1. Remedy the violation by its own efforts, or
2. Obtain a bid or bids for submission to the Commission to remedy the violation, and upon determination by the Commission and the Surety of the lowest responsible bidder, arrange for a contract between such bidder and the Commission, and make available as work progresses sufficient funds to pay the cost of remedying the violation; but not exceeding, including other costs and damages for which the surety may be liable hereunder, the amount set forth in the first paragraph hereof.

Liability under this bond may not be terminated without written permission of this Commission.

WITNESS our hands and seals, this 27th day of July, 1973

California Liquid Gas Corporation

Principal Vice President

WITNESS our hands and seals this 27th day of July, 1973

Safeco Insurance Company of America

Michael H. Matting
Surety, Resident Arizona Agent
If issued in a state other than Arizona Attorney-in-fact

If the principal is a corporation, the bond should be executed by its duly authorized officers, with the seal of the corporation affixed. When principal or surety executes this bond by agent, power of attorney or other evidence of authority must accompany the bond.

Approved Date 9-7-73

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION

By:

Permit No. 617

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION

Serial

File Two Copies

Form No. 2

261-3873
261-3706

Linka Kijp
4774



OFFICE OF
Oil and Gas Conservation Commission
STATE OF ARIZONA
1645 WEST JEFFERSON, SUITE 420
PHOENIX, ARIZONA 85007
PHONE: (602) 271-5161

March 28, 1978

Mr. E. O. Hudson
California Liquid Gas Corporation
P.O. Box 28397
Sacramento, California 95828

Dear Mr. Hudson:

Recent developments connected with the underground storage of LPG in Arizona have caused this Commission to make a study of various safety devices which would tend to prevent any accidents from occurring during the pumping of LPG into a storage reservoir. It has been concluded that a flare system, properly installed and operated in a proper manner, would be the safest and most economical of all safety systems.

These conclusions make it necessary that this Commission request all operators of LPG storage projects within the State to install a flare system at their respective storage sites as quickly as possible. The Commission does not intend to dictate to the operator the technical design of this system, but does retain the right to approve the system selected.

Your full and early cooperation in the installation of such a safety system is expected.

Very truly yours,

W. E. Allen
Director
Enforcement Section

WEA/vb

cc - Glen W. Sorensen

ARIZONA DEPARTMENT OF HEALTH SERVICES
Division of Environmental Health Services

June 9, 1976

RAUL H. CASTRO, Governor
SUZANNE DANDOL, M.D., M.P.H., Director

RECEIVED

JUN 11 1976
O & G CONS. COMM.

Ira L. Kimes, Jr., Colonel, USAF
Commander
Department of the Air Force
Headquarters 58th Combat Support Group (TAC)
Luke Air Force Base, Arizona 85309

Dear Colonel Kimes:

This is to acknowledge receipt of your letter of May 24 and Lt. Col. Ferrell's letter of June 3, 1976 regarding salt mining operations in the vicinity of Glendale and Dysart Avenues near Luke Air Force Base.

On June 3rd, Mr. Ed Garthe of this office discussed this subject with a number of Base officials gathered together in your office.

Southwest Salt Company continues to conduct their mining operation at the northeast corner of the intersection mentioned above. Furthermore, the Arizona Oil and Gas Conservation Commission informs us that a similar operation has begun due north of and nearly contiguous to the aforementioned operation. The California Gas Company is conducting this second mining activity.

The first operation (Southwest Salt Co.) involves production of salt as its primary goal. The activity of the California Gas Company reportedly is for the purpose of creating storage capacity for propane gas. Apparently the salt solution from this operation is delivered to the Southwest Salt Company for processing.

Whether either cavity extends beneath military family housing at Luke Air Force Base has not been verified. The mining operations are licensed by the Arizona Oil and Gas Conservation Commission.

Concerning whether adequate safeguards and precautions are being taken regarding ground faults and subsidence and dangers of gas leakage or explosion, as Mr. Garthe stated on June 3rd, our Department has no authority in this area. Since the facilities are licensed by the Arizona Oil and Gas Conservation Commission, you may wish to pursue this matter directly with them.

Possible pollution of the groundwater supply is an area of responsibility of the Department of Health Services, and it is exercised by our Bureau of Water Quality Control. Dr. Ron Miller, Chief of the Bureau of Water Quality Control, informs me that surveillance of the salt mining will be

ARIZONA DEPARTMENT OF HEALTH SERVICES

Division of Environmental Health Services

June 9, 1976

RAUL H. CASTRO, Governor
SUZANNE DANDON, M.D., M.P.H., Director

RECEIVED

JUN 11 1976

O & G CONS. COMM.

Ira L. Kimes, Jr., Colonel, USAF
Commander
Department of the Air Force
Headquarters 58th Combat Support Group (TAC)
Luke Air Force Base, Arizona 85309

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Ira L. Kimes, Jr., Colonel, USAF
June 9, 1976
Page 2

included in a groundwater monitoring program now under development. In the meantime, the Bureau of Water Quality Control will review Southwest Salt Company records and evaluate the mass balance for water and salt.

Sincerely,

R. Bruce Scott
R. Bruce Scott, P.E.
Assistant Director

cc: Arizona Oil and Gas Conservation Commission
Dr. Ron Miller
Mr. Ed Garthe

Memo to File

From W. E. Allen

March 10, 1976

Maps and booklets containing information regarding California Liquid
Gas's brine pond are in ~~File #627.~~

Glendale project file

April 11, 1975

Mr. James Goff
Division of Environmental Health
Arizona Dept. of Health Services
State Health Building
Phoenix, Arizona 85007

Dear Jim:

I have spoken to you and your office before concerning the salt mining project of Southwest Salt Company in the vicinity of Glendale Avenue and Dysart Road near Luke Field. As you are aware, monitoring of the ponding activities in this area was turned over to your division some time ago.

This Commission has under its jurisdiction the activities of the California Liquid Gas Corporation in creating underground storage in the area and during our frequent visits there we have noticed with some alarm increasing evidence of pond leakage from Southwest Salt Company's operation.

I am calling this to your attention with the thought you might wish to more closely monitor this operation in order to prevent contamination of underlying fresh water aquifers. If we can help you in any way, please do not hesitate to ask.

Sincerely,

John Bannister
Executive Secretary

JB/vb

FENIX & SCISSON, INC.

P. O. BOX 15609

TULSA, OKLAHOMA 74115

KERMIT ALLEN
MANAGER
SOLUTION MINING DEPARTMENT

July 31, 1974

918/835-9471
TWX 910-645-2108

Mr. W. E. Allen
Oil and Gas Conservation Commission
State of Arizona
4515 North Seventh Avenue
Phoenix, Arizona 85013

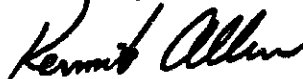
Dear Bill:

Enclosed is a copy of the Dowell Sonar survey report for the California Liquid Gas Corporation propane storage well No. 1, Glendale, Arizona. Due to contractual commitments, we request that this report be treated as confidential.

The development of the storage well is proceeding on schedule; in fact, propane is now being trucked into the terminal and is being stored in the upper portion of the cavern.

During my next trip to Phoenix, I will bring you up-to-date on future plans for the Cal Gas storage terminal.

Yours truly,



Kermit Allen

KA/yc

Enc.

RECEIVED
AUG 1 1974
O & G CONS. COMM.

August 6, 1974

Mr. C. L. Hayes
Fenix & Scisson, Inc.
P. O. Box 15609
Tulsa, Oklahoma 74115

Re: California Liquid Gas Storage Well No. 1
Sec 2-T2N-R1W
Maricopa County
O&GCC Permit No. 617

Dear Mr. Hayes:

We are attaching a supply of Form 28, Transporter's and Storer's Monthly Report, (LPG). Since you have started storing propane in the above referenced reservoir, the Commission requires monthly reports indicating the amount and origin of LPG stored and also the amount and destination of any LPG shipped.

For further information please refer to Rule 705, Paragraph B of the Rules and Regulations of the Oil and Gas Conservation Commission, a copy of which is attached.

Very truly yours,

W. E. Allen, Director
Enforcement Section

WEA/rlb

Enc.

July 22, 1974

Mr. C. L. Hayes
Fenix & Scisson, Inc.
P. O. Box 15609
Tulsa, Oklahoma 74115

Re: Sonary Survey

Dear Mr. Hayes:

Please furnish this office with a copy of the sonar survey that was recently made on California Liquid Petroleum Gas Corporation's No. 1 Storage Well.

Thank you for your cooperation.

Very truly yours,

W. E. Allen, Director
Enforcement Section

WEA/rlb



OFFICE OF
Oil and Gas Conservation Commission
STATE OF ARIZONA
4515 NORTH 7TH AVE.
PHOENIX, ARIZONA 85013
PHONE: (602) 271-5161

June 21, 1974

Ms. Kay Waller
Petro-Well Libraries Inc.
150 Security Life Building
1616 Glenarm Place
Denver, Colorado 80202

Re: April - June Current File Material

Dear Kay:

Enclosed you will find the following current material for April through June.

Data - Completion report and cover sheets on California Liquid Gas
Corporation Storage Well No. 1, Permit #617

Logs - Nuclear Log, Caliper Log, 3-Dimensional Velocity Log,
Compensated Formation Density Log (Gamma-Gamma)

Very truly yours,

Rhema Brandt
Secretary to W. E. Allen
Director, Enforcement Section

rlb

Encs.

Logs returned 7-15-74

May 8, 1974

Mr. Glen Sorensen
California Liquid Gas Corporation
P. O. Box 28397
Sacramento, California 95828

Re: California Liquid Gas Storage Well No. 1
Section 2-T2N-R1W
Maricopa County
O&GCC Permit No. 617

Dear Mr. Sorensen:

This is to advise you that according to the Rules and Regulations of the Oil & Gas Conservation Commission the confidentiality period on your above referenced well expired May 6, 1974.

The geologic information that we have on file is now available to the public.

Very truly yours,

W. E. Allen, Director
Enforcement Section

WEA/r1b

cc Fenix & Scisson, Tulsa

W A
PLEASE REPLY TO:
P. O. BOX 15609
TULSA, OKLAHOMA 74115

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

November 13, 1973

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Oil and Gas Conservation Commission
State of Arizona
4515 North 7th Avenue
Phoenix, Arizona 85013

Gentlemen:

To my letter of November 5, 1973, was attached the completion report for the California Liquid Gas Corporation's LP-gas storage well No. 1. Copies of the logs run in the well were not available when the completion report was transmitted to you.

These logs have now been received and copies are enclosed for your records.

Very truly yours,

H. H. Holloway
H. H. Holloway

HHH:wif
Encls.

cc: Mr. Glenn W. Sorensen w/encls.

RECEIVED

NOV 14 1973

O & G CONS. COMM.

WA

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

November 5, 1973

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

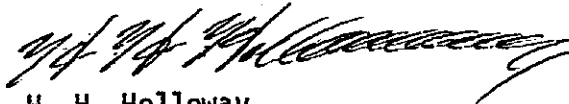
PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Oil and Gas Conservation Commission
State of Arizona
4515 North 7th Avenue
Phoenix, Arizona 85013

Gentlemen:

Attached is the completion report for the California
Liquid Gas Corporation's LP-gas storage well No. 1.
We have not yet received the finished copies of the
logs run in the well; but, in order to prevent further
delay in filing this report, we are submitting it now
and will transmit copies of the logs to you as soon
as they are received.

Very truly yours,


H. H. Holloway

HHH:wi
Encl.

cc: Mr. Glenn W. Sorensen w/encl.

RECEIVED

NOV 6 1973

O & G CONS. COMM.

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

October 1, 1973

PHONE (918) 835-9471
TWX NO. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. John Bannister
Oil & Gas Conservation Commission
4515 North Seventh Avenue
Phoenix, Arizona 85013

Dear John:

When I last met with you, back on July 9, 1973, I promised to submit a survey plat for the Cal Gas fresh water well. We finally obtained one, and it is enclosed.

Both the solution well and the fresh water well are now being drilled. Mr. Gene Alleman has moved to Phoenix and will serve as our field superintendent. Gene has a long and successful history, both with us and in the oil business. I'm sure you will find him competent and cooperative.

We have made some organizational changes to better handle our rapidly increasing solution mining work. Although the changes don't formally take effect until November 1, we have been shuffling duties since mid-September. In essence, a separate Solution Mining Department has been formed with direct control over all solution mining work. The Engineering Department will treat the Solution Mining Department somewhat like a client, supplying engineering services as required. Operational field personnel will be a part of the Solution Mining Department.

In the past, Mr. H. H. Holloway has managed the construction phases of our solution work. That authority has now been transferred to Mr. Kermit Allen, Manager of the Solution Mining Department. Mr. Holloway has been designated Chief Drilling Engineer and will remain very active in the drilling phase of the solution work.

I have been attached to the Solution Mining Department as Projects Development Engineer. My primary responsibilities are to develop new projects and to oversee feasibility studies. I will also continue, at least for awhile, to assist Kermit with the management of the Cal Gas Luke Project.

We hope to weather this transition without flaws, but should we fail to meet any obligations to your office, please call me.

Yours truly,

Alfred H. Medley
Alfred H. Medley

AHM/yc
Enc.

cc - Mr. Glenn Sorensen w/enc.

RECEIVED

OCT 4 1973

O & G CONS. COMM.

617

September 7, 1973

Mrs. Jo Ratcliff
Four Corners Sample Cut Association
P. O. Box 899
Farmington, New Mexico 87401

Dear Mrs. Ratcliff:

The following permit was issued September 7, 1973.

California Liquid Gas Storage Well No. 1
SW/NW Sec 2-T2N-R1W
Maricopa County
Permit No. 617

Please note this is a LPG Storage Well.

Very truly yours,

W. E. Allen, Director
Enforcement Section

/r1b

September 7, 1973

Mr. Frank Getscher
P. O. Box 98
Scottsdale, Arizona 85252

Dear Mr. Getscher:

The following permit was issued September 7, 1973.

California Liquid Gas Storage Well No. 1
SW/NW Sec 2-T2N-R1W
Maricopa County
Permit No. 617

Please note this is a LPG Storage Well.

Very truly yours,

W. E. Allen, Director
Enforcement Section

/rlb

September 7, 1973

Mr. H. H. Holloway
Penix & Scisson, Inc.
P. O. Box 15609
Tulsa, Oklahoma 74115

Re: California Liquid Gas Storage Well No. 1
SW/NW Sec 2-T2N-R1W
Maricopa County
Permit No. 617

Dear Mr. Holloway:

Enclosed please find Receipt No. 2 covering the \$25.00 filing fee, a copy of your approved Application to Drill and Permit to Drill No. 617.

Also enclosed are miscellaneous instruction sheets concerning samples and other Commission requirements.

Very truly yours,

W. E. Allen, Director
Enforcement Section

/rlb

Enc.

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

September 5, 1973

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

WH

Mr. W. E. Allen
Oil and Gas Conservation Commission
State of Arizona
4515 North 7th Avenue
Phoenix, Arizona 85013

Dear Mr. Allen:

In response to your letter of August 30 concerning our application for a permit to drill in Maricopa County, Arizona, I am attaching our check in the amount of \$25 for the permit fee. I am sorry that this was overlooked in our submission of the application to drill.

Very truly yours,

H. H. Holloway
H. H. Holloway

HHH:wi
Encl.

RECEIVED

SEP 6 1973

O & G CONS. COMM.

August 30, 1973

Mr. H. H. Holloway
Fenix & Scisson, Inc.
P. O. Box 15609
Tulsa, Oklahoma 74115

Dear Mr. Holloway:

We have received your application for a permit to drill a storage well in Maricopa County. Everything seems to be in order, however, your failed to include the \$25.00 fee as stated in Rule 102 A.1., of the Arizona Oil & Gas Conservation Commission Rules and Regulations.

As soon as we receive the \$25.00 we will issue your permit.

Very truly yours,

W. E. Allen, Director
Enforcement Section

Rhema Brandt
Secretary to W. E. Allen

/rlb

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

August 27, 1973


PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. John Bannister
Oil and Gas Conservation Commission
State of Arizona
4515 North 7th Avenue
Phoenix, Arizona 85013

Dear John:

It appears that we are once again doing business with the State of Arizona. Attached are necessary forms and plats covering a storage well we propose to drill for the California Liquid Gas Corporation in Maricopa County. I believe the attached information fulfills our requirements for the permit application; however, if I have overlooked anything, please let me know.

Very truly yours,


H. H. Holloway

HHH:wi
Encls.

May 14, 1973

Mr. Jay C. Stuckey, Jr.
111 West Monroe
Phoenix, Arizona 85013

Re: Cal Gas Salt Domes Storage Project in Vicinity of Glendale
and Dysart Roads

Dear Mr. Stuckey:

Please be advised that the Oil and Gas Conservation Commission of the State of Arizona will assume jurisdiction for the above identified project pursuant to the authority granted to this Commission under Title 27, Chapter 4, Article 1, Section 27-501 et seq. Further pursuant to the statutory authority granted to this Commission the Commission has duly adopted rules and regulations concerning, among other things, the use of wells to store LPG or other gases within this State. I would specifically refer you to Rule 705 A and B.

It is well established that oil and gas commissions such as ours have the legal authority to regulate the storage of underground products. For your information and convenience I am enclosing a copy of the Commission Rules and Regulations. Should you have any questions, please advise.

Sincerely,

John Bannister
Executive Secretary

JB:st

Enclosure

cc: William E. Allen
Cal Gas

8-16-74, sent a copy of this letter to

Richard Zielinski
Legal Council
Planning & Zoning
City Admin. Bldg.
3rd Floor
111-40-3 Ave
PHY 75003

JB
WJA

PLEASE REPLY TO:
P. O. Box 15609
TULSA, OKLAHOMA 74115

FENIX & SCISSON, INC.

5805 EAST FIFTEENTH STREET
TULSA, OKLAHOMA

January 26, 1973

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JAN 28 1973

O & G CONS. COMM.

PHONE (918) 835-9471
TWX No. (910) 845-2108
CABLE ADDRESS: FENSON TULSA

Mr. John Bannister
Oil & Gas Conservation Commission
4515 North 7th Avenue
Phoenix, Arizona 85013

Dear John:

Enclosed is a letter to the Mohave County Planning and Zoning Commission regarding feasibility of developing propane storage in the Red Lake region of the Hualapai Valley.

Our efforts to develop a storage facility west of Phoenix have been stalled by leasing problems between Southwest Salt and the landowners.

If either of these possibilities begin to jell into a drilling program, I'll phone and bring you up to date.

Yours truly,

A. H. Medley

A. H. Medley

AHM/yc

Enc.

THE ATTACHED CHECK IS IN FULL SETTLEMENT OF ACCOUNT SHOWN HEREIN • DETACH BEFORE DEPOSITING

JOB NO.	DATE	DESCRIPTION	AMOUNT	DISCOUNT	NET AMOUNT
	9/4/73	Drilling Permit	25.00		25.00
			RECEIVED SEP 6 1973 O & G CONS. COMM.		

FENIX & SCISSON, INC.
P. O. BOX 15609
TULSA, OKLAHOMA 74115

No. 32265 -1

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS

Bond Serial No. 210108

That we: California Liquid Gas Corporation

of the County of Sacramento in the State of California

as principal, and Safeco Insurance Company of America

of Seattle, Washington

AUTHORIZED TO DO BUSINESS WITHIN the State of Arizona.

as surety, are held and firmly bound unto the State of Arizona and the Oil and Gas Conservation Commission, hereinafter referred to as the "Commission", in the penal sum of \$5,000.00 lawful money of the United States, for which payment, well and truly to be made, we bind ourselves, and each of us, and each of our heirs, executors, administrators or successors, and assigns jointly and severally, firmly by these presents.

The conditions of this obligation are that, whereas the above bounden principal proposes to drill a well or wells for oil, gas or stratigraphic purposes in and upon the following described land situated within the State, to-wit: The Southwest quarter of the Northwest quarter of Section 2, Township 2 North, Range 1 West of the G&SRB&M, County of Maricopa, Arizona

(May be used as blanket bond or for single well)

NOW, THEREFORE, if the above bounden principal shall comply with all the provisions of the Laws of this State and the rules, regulations and orders of the Commission, especially with reference to the requirements of A.R.S. § 27-516, providing for the proper drilling, casing and plugging of said well or wells, and filling with the Oil and Gas Conservation Commission all notices and records required by said Commission, then in the event said well or wells do not produce oil or gas in commercial quantities, or cease to produce oil or gas in commercial quantities, this obligation is void; otherwise it shall remain in full force and effect.

Whenever the principal shall be, and declared by the Oil and Gas Conservation Commission in violation of the Laws of this State and the rules, regulations and orders of the Commission, the surety shall promptly:

1. Remedy the violation by its own efforts, or
2. Obtain a bid or bids for submission to the Commission to remedy the violation, and upon determination by the Commission and the Surety of the lowest responsible bidder, arrange for a contract between such bidder and the Commission, and make available as work progresses sufficient funds to pay the cost of remedying the violation; but not exceeding, including other costs and damages for which the surety may be liable hereunder, the amount set forth in the first paragraph hereof.

Liability under this bond may not be terminated without written permission of this Commission.

WITNESS our hands and seals, this 27th day of July, 1973

California Liquid Gas Corporation

Principal Vice President

WITNESS our hands and seals this 27th day of July, 1973

Safeco Insurance Company of America

Attorney-in-fact

(If the principal is a corporation, the bond should be executed by its duly authorized officers, with the seal of the corporation affixed. When principal or surety executes this bond by agent, power of attorney or other evidence of authority must accompany the bond.)

Approved Date

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION

By:

Permit No. 6017

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION

Bond

File Two Copies

Form No. 2

RECEIVED

AUG 28 1973

O & G CONS. COMM.



SAFECO INSURANCE COMPANY OF AMERICA
GENERAL INSURANCE COMPANY OF AMERICA

LIMITED POWER OF ATTORNEY

No. 3133

KNOW ALL MEN BY THESE PRESENTS:

That SAFECO Insurance Company of America and General Insurance Company of America, each a Washington corporation, does each hereby appoint

-----MICHAEL M. MATTINGLY, Sacramento, California-----

its true and lawful attorney(s)-in-fact, with full authority to execute on its behalf fidelity and surety bonds or undertakings and other documents of a similar character issued in the course of its business, and to bind the respective company thereby in amounts or penalties not exceeding the sum

of TWO HUNDRED FIFTY THOUSAND AND NO/100-----DOLLARS (\$ 250,000.00)

IN WITNESS WHEREOF, SAFECO Insurance Company of America and General Insurance Company of America have each executed and attested these presents

this 8th day of August, 1972

W. D. Hammersla
W. D. HAMMERSLA, SECRETARY

Gordon H. Sweany
GORDON H. SWEANY, PRESIDENT

CERTIFICATE

Extract from Article VI, Section 12, of the By-Laws of SAFECO Insurance Company of America and of General Insurance Company of America:

"Article VI, Section 12, - FIDELITY AND SURETY BONDS . . . the President, any Vice President, and the Secretary shall each have authority to appoint individuals as attorneys-in-fact or under other appropriate titles with authority to execute on behalf of the company fidelity and surety bonds and other documents of similar character issued by the company in the course of its business . . . On any instrument making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or undertaking of the company, the seal, or a facsimile thereof, may be impressed or affixed or in any other manner reproduced; provided, however, that the seal shall not be necessary to the validity of any such instrument or undertaking."

Extract from a Resolution of the Board of Directors of SAFECO Insurance Company of America and of General Insurance Company of America adopted July 28, 1970:

"On any certificate executed by the Secretary or an assistant secretary of the company setting out,
(i) The provisions of Article VI, Section 12 of the By-Laws, and
(ii) A copy of the power-of-attorney appointment, executed pursuant thereto, and
(iii) Certifying that said power-of-attorney appointment is in full force and effect,
the signature of the certifying officer may be by facsimile, and the seal of the company may be a facsimile thereof."

I, William Hammersla, Vice-President and Secretary of SAFECO Insurance Company of America and of General Insurance Company of America, do hereby certify that the foregoing extracts of the By-Laws and of a Resolution of the Board of Directors of these corporations, and of a power-of-attorney issued pursuant thereto, are true and correct, and that the By-Laws, the Resolution and the power-of-attorney are still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said corporations

this 21st day of July, 1973



W. D. Hammersla
RECEIVED

AUG 28 1973

O & R 6015 16044A